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U.S. Patent Office

34<sup>TH</sup> CONGRESS, }  
1<sup>ST</sup> Session. }

SENATE.

{ Ex. Doc.  
No. 20.

# REPORT

OF THE

## COMMISSIONER OF PATENTS

FOR THE YEAR 1855.

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ARTS AND MANUFACTURES.

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VOLUME I.

WASHINGTON:  
A. O. P. NICHOLSON, PRINTER.  
1856.



PATENT OFFICE,  
*Washington, February 11, 1856.*

SIR: I have the honor to transmit herewith, to be laid before Congress, my annual Report for the year 1855, as required by the 14th section of the act of 3d March, 1837.

I have the honor to be, very respectfully, your obedient servant,

CHARLES MASON,  
*Commissioner of Patents.*

Hon. JESSE D. BRIGHT,  
*President Senate United States.*





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# R E P O R T

## OF THE

# COMMISSIONER OF PATENTS,

### FOR THE YEAR 1855.

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UNITED STATES PATENT OFFICE,  
*January 31, 1856.*

SIR: In obedience to the requirement of the fourteenth section of the act of March 3d, 1837, entitled "An act in addition to the act to promote the progress of science and useful arts," I now proceed to report the facts therein required, showing the transactions of this office during the past year, and its condition at the commencement of the present.

The total number of applications for patents during the year 1855 is.....	4,435
The entire number of patents issued.....	2,024
The whole amount of fees received.....	\$176,380 57
The aggregate of expenditures.....	179,540 33
Excess of expenditures over fees.....	<u>\$3,159 76</u>

But by the act of March 3d, 1855, the money which had been previously taken from the patent fund for agricultural purposes, amounting to \$40,078 78, was refunded; adding this to the amount of fees received, shows the whole amount of income during the year to be \$216,459 35, which exceeds the total expenditure by \$36,919 02.

The receipts and expenses of the office for the past year, together with the present condition of the patent fund, will be seen by reference to the following statements:

#### No. 1.

*Statement of moneys received at the Patent Office during the year 1855.*

Received on applications for patents, reissues, additional improvements, and extensions, and on caveats, disclaimers, and appeals.....	\$162,120
----------------------------------------------------------------------------------------------------------------------------------------	-----------

Brought forward.....	\$162,120 00
Received for copies, and for recording assignments....	14,227 57
Received for old sash.....	33 00
	<hr/>
	176,380 57
Amount reimbursed to patent fund, per act of 3d March, 1855.....	40,078 78
	<hr/>
Total.....	<u><u>\$216,459 35</u></u>

## No. 2.

*Statement of expenditures from the Patent Fund during the year 1855.*

Salaries.....	\$67,629 06
Additional compensation, per act of 22d April, 1854....	2,229 50
Temporary clerks.....	31,938 19
Books for the library.....	830 45
Contingent expenses.....	36,764 82
Payments to judges in appeal cases.....	450 00
Refunding money paid into the Treasury by mistake..	225 00
Refunding money on withdrawals.....	39,473 29
	<hr/>
	<u><u>\$179,540 33</u></u>

## No. 3.

*Statement of the Patent Fund.*

Amount to the credit of the patent fund on the 1st of January, 1855.....	\$25,593 52
Amount paid in during the year, including \$40,078 78, reimbursed to the patent fund by the act of 3d March, 1855, being the amount heretofore paid out for agricultural statistics, &c.....	216,459 35
	<hr/>
Total.....	242,052 87
From which deduct—	
Amount of expenditures during the year.....	179,540 33
	<hr/>
Leaving in the Treasury on the 1st of January, 1856 ..	<u><u>\$62,512 54</u></u>

From the following table it will be seen how rapidly the business and revenues of the office have increased during the past fifteen years:

No. 4.

Table exhibiting the business of the Office for fifteen years, ending December 31, 1855.

Years.	Applications filed.	Caveats filed.	Patents issued.	Cash received.	Cash expended.
1841.....	847	312	495	\$40,413 01	\$23,065 87
1842.....	761	291	517	36,505 68	31,241 48
1843.....	819	315	531	35,315 81	30,776 96
1844.....	1,045	380	502	42,509 26	36,344 73
1845.....	1,246	452	502	51,076 14	39,395 65
1846.....	1,272	448	619	50,264 16	46,158 71
1847.....	1,531	533	572	63,111 19	41,878 35
1848.....	1,628	607	660	67,576 69	58,905 84
1849.....	1,955	595	1,076	80,752 78	77,716 44
1850.....	2,193	602	995	86,927 05	80,100 95
1851.....	2,258	760	869	95,738 61	86,916 93
1852.....	2,639	996	1,020	112,056 34	95,916 91
1853.....	2,673	901	958	121,527 45	132,869 83
1854.....	3,324	868	1,902	163,789 84	167,146 32
1855.....	4,435	906	2,024	216,459 35	179,540 33

The augmentation of the number of *applications* has been greater during the past year than at any previous period. That the increase in the number of *patents* is not proportionally great, is due to the fact that at the commencement of the year 1854 there were 823 cases undisposed of in the office, so that the whole number of cases acted upon during that year exceeded 4,000. At the beginning of the year 1855, there were but eighty-nine cases on hand, and on the first day of the present year only sixty-six.

There are papers in the office to show that, less than fifty years since, the annual income of the office was only about \$1,500, and that for the seven years previous to 1826 the aggregate amount received was about \$42,000, or an average of \$6,000 per annum. These facts, taken in connexion with the last of the above statements, will show with what a constantly accelerated rapidity the march of invention has been progressing for the last half-century.

Hereto will be found appended a classified list of all the patents which have been granted during the past year, together with an alphabetical list of the patentees and their places of residence. Also a list of all patents which have become public property during the same period.

In addition to the classified list of the patents granted within the year, it has long been the practice to furnish in the report a brief description of each of those patents, so as to present a general idea of its nature and purpose. To render these descriptions more intelligible, illustrations have been added in the reports for the past two years. This seems to have met with general favor, and the present report is prepared in

the same manner. I trust it will also meet with the approval of Congress.

The act of the last session, authorizing the appointment of six additional principal examiners, limited the continuance in office of two of that number to the end of the present session, unless further extended by a new law. I deem it indispensable to the prompt transaction of the business of the office, that the present force should not be diminished.

The number of applications in 1854 was twenty-five per cent. greater than in 1853, and the increase during the past year is more than thirty-three per cent. of the whole number of applications of the year previous. This increase during the past year alone is sufficient to furnish employment for three principal examiners and as many as assistants, reckoning by the average number heretofore acted on by each set of examiners. If anything like the same ratio of increase is to be continued hereafter, the present number of examiners will, before the end of the present year, be found inadequate to the discharge of the duties which will devolve upon them.

Still there are very grave objections to a further increase of the number of principal examiners. The system is already overgrown in that respect, and seems almost imperatively to demand some modification to give it a proper harmony and uniformity of action.

Each of the twelve principal examiners has charge of certain prescribed classes of cases. They necessarily act, to a considerable extent, independently of each other, and, possessing very different minds and views, they follow different rules of action and of decision.

The multiplicity of business in the office renders it wholly impossible for the Commissioner to exercise a personal supervision over the decisions in each of the numberless cases presented for official action. When the examiner reports in favor of granting a patent, it is issued without further question or examination.

In case of the *rejection* of an application, the law and the practice of the office permit an appeal to the Commissioner, and finally to one of the judges of the circuit court of the District. But such appeals are attended with much trouble and expense, so that, in most cases, especially where the applicant resides at a distance, a rejection by the examiner is, in point of fact, final. Under such circumstances, the importance of correctness and uniformity of decision upon the first examination can hardly be too highly appreciated. They cannot reasonably be hoped for under the system now in operation, and the more that system is extended the greater the evil becomes.

To remedy this difficulty several plans have been suggested, but they generally resolve themselves into one of the two following, or modifications thereof:

1st. The appointment of an *examiner-in-chief*, whose sole duty would be to review the actions of the present examiners, with a view of introducing correctness and uniformity of decision. As a modification of this plan, it has been sometimes proposed to increase the number of examiners-in-chief to three, some one of whom should make a final decision upon each of the various questions, which should first be fully

and clearly presented by some of the members of the corps of examiners as now constituted, and who might all three act conjointly on appeals and other cases of unusual difficulty.

2d. To return to the former practice of the office, making the duties of the examiners simply advisory, and allowing a patent in all cases, provided the applicant should finally insist upon it, notwithstanding the opinion of the office as to its invalidity.

The main objection to the former of the above plans grows out of the difficulty of obtaining competent and suitable persons to fill the chief places. I doubt whether there is a situation under the government for which it would be more difficult to find a suitable incumbent. Qualities would be required for the satisfactory discharge of such a duty which are rarely found united—a well-trained capacity for comprehending and investigating all subjects connected with natural and mechanical philosophy, and a high order of legal acumen and experience. The difficulty is still further increased by the fact, that very few of our lawyers have ever turned their attention in this direction. The law relating to patents is less understood by the profession than any other branch of that noble science. And as the cherished rights of inventors are to be submitted to the sound discretion of these officers, habits of patient and laborious investigation and the high moral qualifications of integrity and impartiality are quite as indispensable as those of an intellectual character.

If the difficulty of securing the services of persons possessing a union of all the above-mentioned qualities could be overcome, the plan we are now contemplating would probably be the readiest and most judicious mode of effecting the desired improvement of the present system. But the doubt of success in such an effort is so great, that something in the nature of the second plan, as above stated, seems worthy of some consideration.

That plan, however, would necessarily be subjected to some important modification before it would be admissible. When a meritorious inventor has obtained a patent which proves of high value, there are not wanting unscrupulous men, who are willing to trespass upon his well-earned rights. To permit a person of that character to take out a patent, valid on its face, for precisely the same invention, would be not only countenancing intentional wrong, but the office would almost become a participant in a design to impose upon the public. Persons taking assignments of either patent, would have no sufficient means of distinguishing between the spurious and the true, and would be as likely to purchase a property in the invention from the infringer, as from the real inventor—both being armed with the same evidence of legal ownership. This would be nearly akin to authorizing forgery and counterfeiting by law.

But if every patent granted contrary to the opinion of the office were required to bear conspicuously upon its face the evidence of that fact, or if the option of the applicant to demand a patent were limited to cases which would authorize no infringement of any pre-existing American patent, the difficulty above intimated would, to a great extent, be obviated. Perhaps, even when an application was held by



the office to conflict with the rights of a previous patentee, the applicant might be permitted to insist upon his patent after due notice to the patentee, and a full opportunity given him to contest, in some proper court, the validity of the patent sought by the new applicant.

Should anything of the kind above intimated be adopted, it would, doubtless, be proper to provide a means by which any patent, wrongfully claimed and granted, might be invalidated and cancelled. In fact, some provision of this nature would seem eminently proper and valuable under any system of patent laws.

The modifications we have last been considering would relieve the office from much of the judicial labor now devolving upon it, and would render the same high order of qualifications and experience less absolutely essential in the examining corps. Most of the legal controversies now arising in the office would be turned over to the courts of law, which are not only so much better qualified to adjudicate, but which possess the requisite machinery to investigate and conduct such matters, so as to lead to a result more satisfactory than can be done here.

All our republican notions of propriety revolt at the idea of making the substantial rights of property of any citizen depend upon the mere discretion of an executive officer. Such a system seems rather Asiatic than Anglo-Saxon in its type and origin. The present patent laws are certainly, to some extent, liable to this objection. It is true, they provide in some manner for bringing many of the decisions of the office before the regular judicial tribunals; but when an application which should be patented is rejected by the office, no opportunity is allowed the applicant for showing the justice of his claims before a court or jury. If he has a natural right to what he has created, may he not, in such circumstances, be regarded as having been "deprived of his property without due process of law"—without the intervention of that great constitutional bulwark which he regards as a birthright—a fair trial before a regular judicial tribunal?

That he has now the privilege of appealing to the judge of the circuit court, does not change the case essentially. That judge is only (for the occasion) a part and parcel of the Patent Office. He does not hear the case anew, but founds his opinion upon the necessarily imperfect facts and statements which are presented to the office.

The question of patentability is often one of the most delicate and difficult that can ever arise before any tribunal. A resort to the testimony of experts is frequently essential to a just and correct decision. The law now makes no provision for this or any other kind of testimony. No witness is obliged to appear, or to give testimony, unless he does so at his own option; and even if he swears falsely, there is no statute penalty.

Without the means of proving the practical working of his machine, or without any other legal testimony, the inventor sometimes provides himself with a few certificates or *ex-parte* affidavits—often of doubtful authenticity, and always regarded with suspicion; presents himself before the office; is rejected; appeals to the judge, who has no adequate means of arriving at a correct conclusion; and thus is frequently

deprived of his rights without an opportunity of establishing them in the manner guarantied to all other citizens.

Nor ought it to be supposed that these are matters of trivial moment ; at least they are not so to the individual most immediately interested. To him, the offspring of his mental energies are something more than property ; they are his children, for whom he has often labored through much of the fairest portion of life's meridian, and on whom he relies for consolation and support in the evening of its decline.

That he has now no sufficient opportunity of establishing his rights before a properly constituted tribunal, is doubtless a great defect in the present system. Whether that defect shall be remedied, and if so, in what manner, will be for Congress to determine.

The above suggestions are not intended as proposing any definite plan for modifying the present laws, but merely as presenting the difficulties experienced, and furnishing some hints which may serve as a basis for future consideration by the body to whom the matter is submitted.

The present insecurity of the property of inventors, even after patents are obtained, is a source of great discouragement, and often of peculiar hardship. A patent gives to the holder only a presumptive right of property. When it is infringed—no matter how wantonly—the trespasser is permitted to protect himself by proving at the trial that the invention was first made by some other person, and not by the plaintiff; though it may have been kept a profound secret, and would never have seen the light, but for the subsequent invention of the patentee;—or he may defeat the action by showing that the same contrivance is described in some publication printed in any foreign language, and which publication was never seen or heard of in this country before the date of the trial when this proof is made.

The liability to be set at defiance in this manner continues throughout the entire life of the patent ; and no matter how often the validity of the patent may be established in court, it is equally liable to be called in question on any new trial. The disheartening and prostrating influence that this is calculated to exert upon those who devote their lives and energies to the improvement of all the arts of civilized life, and to making those discoveries which have given a character to the present age, can readily be perceived without comment.

In the opinion of many, however, any remedy that can be contrived would be more to be feared than the evil which was sought to be remedied. But is there any good reason for such a conclusion? Why should the holder of a patent, which is presumptive evidence of title, be forever liable to have his right called in question by every mere trespasser? Such a course is not permitted in relation to any other species of property. The wrong-doer is not in other cases permitted to protect himself by calling in question the title of him who has *prima-facie* evidence of ownership. Why should he do so in relation to this species of property?

It is true, that if a patent should be granted for a machine already in common use, and which is therefore fully the property of the public, any person sued as an infringer should be permitted to protect himself

by showing the facts of the case. But why should a person who has trespassed upon what he does not pretend to be public property, be allowed to defend himself by showing the property to belong rightfully to some other individual?

The analogies of the law relating to tangible property lead to this same conclusion. If one person make an enclosure upon the lands of another, his right of action against any trespasser is complete and unquestionable; but if he were to enclose a portion of the public highway, no such action would be maintainable, for his enclosure is itself a nuisance, which any one may disregard or remove.

Analogy also suggests another provision, still more important and effectual. So great are the evils resulting from uncertainty of title to real estate, that in most of our codes means are provided by which the presumptive owner may file a bill in equity, and bring such uncertainty to an end. Is there anything in the species of property we are considering, which renders a similar provision out of place or objectionable? If the holder of a patent were permitted, under proper regulations, to file a bill to quiet his title, either in one of the federal courts already organized, or in a special tribunal created expressly for that purpose, would not the result prove as harmless and as beneficial as though the patent were for real estate? The patentee would then be enabled to feel that security which would give double value to his property, and would be free from that continued series of vexatious lawsuits which often render the most valuable inventions the sources of continual annoyance, if not of eventual pecuniary ruin to their authors.

As a short and effectual remedy for all these difficulties, it is the opinion of some who have thought upon this subject that the whole system of granting patents ought at once to be abolished; but is it not one of the cardinal purposes in the establishment of all governments to protect the citizen in undisturbed enjoyment of his property? This species of property is by the Constitution placed under the special guardianship of Congress, and it is difficult to perceive why it is not as much entitled to legislative favor and protection as any other property. If inventions are not to be made capable of being effectually appropriated, why should lands, or any tangible article of personal property be so? And yet no one proposes to return to the savage state, so far as these kinds of property are concerned. To do so in regard to inventions, would be a retrograde in civilization, as well as a departure from the plainest principles of justice.

No title can be more unquestionable than that resulting from discovery, unless it be that which is derived from actual creation. The recognition of either, if not instinctive in the brute, is certainly found in the lowest and most uncultivated orders of human intelligences. The bird seems to have a sense of property in its nest, the beast in his lair, the savage certainly in the cave he has discovered or the weapon he has made; even the first occupant of a tract of land which he has neither discovered nor created, has a title which, in the absence of a better, is protected by the governments of all civilized countries.

To none of these is the title of the inventor at all inferior. He has created or discovered all that he claims the right to possess. The

property for which he asks protection might never have existed but for him, who has created it out of nothing. At least, he has called it into active being, and made it the servant of mankind, subject to the limited right of ownership, which he claims for himself. And when it is remembered that it is chiefly through the exercise of this inventive faculty that civilized man has risen above the savage, or that even the savage is to be distinguished from the brute—that it is the inventor who has either directly or indirectly been, and still is, the great instrument of human progress—that his has been the wizard wand which has called forth from the latent powers of nature messengers and servants, surpassing in fleetness and power, and mute obedience, the fabulous genii of eastern tale—which has seized and fixed, as by enchantment, the transient and varying lineament, or the flying sound, and transmitted them unchanged to the latest posterity; or that, in humbler, but perhaps equally useful endeavors, he wears out his life in often unrequited efforts to benefit mankind, it must be a mistaken or perverted impulse which would grudge him that protection which is accorded to all others, or that would fail to encourage, in all suitable ways, efforts from which the world is now reaping such incalculable benefits.

The evil effects which would be the result of a departure from the rule of right in this case are easily perceivable. Were the law to afford no protection to the inventor, his only means of reaping any particular benefit from his invention would be by hiding it from the knowledge of the world, as in Turkey the peasant secretes his wealth lest it should become the prey of that rapacity against which the laws afford no sufficient protection.

But the knowledge that is thus hidden is often lost; at all events its utility is greatly lessened. The ancients were known to have been possessed of many valuable arts which modern ingenuity has tried in vain to re-discover. They are, perhaps, lost to the world forever; which would not have been the case had there been a judicious system of patent laws in existence.

Besides, in relation to many kinds of inventions, secrecy cannot afford any protection. Many machines, utensils, and manufactures are useful to the inventor only as they are publicly sold and used, and cannot, therefore, be hidden from the world. Without some other protection, therefore, that great moving power of human action—the stimulus of pecuniary gain—would never arouse to their full energies the efforts of human ingenuity.

The reason why hundreds of intellects in all parts of our country are strained to their utmost tension in the attempt to discover something that shall prove useful to mankind, is attributable to the fact that individual profit is inseparably blended with the general welfare. But who would cultivate a field if others were to have an equal right to reap the harvest? The acknowledgment and protection of private property are the parents of industry and effort, as much in relation to inventions as to any other species of possession or estate.

For reasons like these, some have claimed that the property of the inventor in the creations of his own ingenuity should be perpetual; and the argument, founded on natural justice, is not without great weight. The main objection against it is drawn from expediency.

Original inventions are always imperfect, leaving much to be done by subsequent inventors. The patentee of each improvement upon any invention must obtain the license of previous inventors before he can avail himself of his own property. Were all these patents perpetual, as well as those for improvements made upon improvements, and combination upon combination, we should, in the course of time, find ourselves surrounded by inextricable confusion. The inventor must, therefore, be satisfied with such a modification of his rights as is required by the public good. Whether the present limit be not too narrow, is a matter worthy of consideration. It certainly is so, if the whole period of its duration is to be consumed in contest after contest—all leading to no final result.

Some modifications of the present rates of official fees have been recommended in former reports. They still seem desirable—not so much for the purpose of increasing our revenues to any greater extent, as with a view to a more accurate adjustment of the amount of compensation to the labor and trouble occasioned by the respective cases.

In pursuance of the general idea of rendering the Patent Office merely a self-sustaining establishment, it seems desirable that every case should, as nearly as practicable, be taxed with the expenses it occasions, but no more. This rule might easily be much more strictly observed than it is at present.

The most signal departure from it is seen in the exorbitant fees demanded of foreign applicants. Where the citizen or immigrant alien pays a fee of thirty dollars, the subject of the Queen of Great Britain, who resides at home is obliged to pay five hundred dollars. And yet the application of the latter occasions no more trouble than that of the former.

The plausible reason for this difference is, that our citizens are obliged to pay as great a fee when applying for a British patent as is required of the British subject at our office. It should, however, be remembered, that the British government makes no discrimination in this respect between subjects and aliens; all are taxed at the same exorbitant rates.

The patent office in that country is made a source of revenue. The net receipts into the treasury from the patent fund, in 1854, were about \$75,000, after having paid more than \$300,000 in salaries and other expenditures. It will require little argument to prove that this is a course of policy which is not in any degree worthy of our imitation.

These inordinate rates of fees produce to a great extent the same evils which would result from the entire abolition of all patent laws. Invention is thereby greatly checked; for why should any one exert himself to create what he cannot afford to secure? Many seek to protect their rights by secrecy, and on both of these accounts the world loses many of the advantages which, under a better system, it would secure forever.

Our law co-operates with that of Great Britain in producing this very result. The inventive genius of other nations, checked or disheartened at home, finds itself repulsed here also; and that faculty which was intended to promote the progress and happiness of the race

of mankind, lies comparatively inert and useless throughout a large portion of our brethren of the human family.

If all patents were to be regarded as gratuities to the patentees, there would be some reason in the rule that the subjects of other governments should be treated as those governments treat our own citizens in this respect. But patents for inventions are no more to be so considered than patents for lands. In either case, the government receives a full consideration for what it grants. The inventor reveals his secret—receives a sole property in the invention for fourteen years, and surrenders it to the public afterwards, paying all the time the expenses occasioned by the transaction of the necessary business. Can any one doubt that this is a transaction advantageous to the public? If it be so, need we ask of what nation the other contracting party is a citizen? It is not usual for our countrymen to be thus fastidious, when they are making profitable contracts. Our government grants patents for its lands, without asking such questions. Our citizens ransack the world for customers who will offer them bargains of that description.

Or if a patent granted to an alien were in any way antagonistic to the legitimate interests of the home inventor, there would be some reason for discouraging foreign applications by high rates of fees. But such is not the case, unless we are prepared to advocate the smothering of a valuable truth discovered in another country for the doubtful possibility of the same discovery being made afterwards by one of our own fellow-citizens.

Every real invention is a point gained, not by the country where the invention is made, but by the world to whom it is revealed. It is one more step in advance made by our common humanity in the progress of that development to which it is ultimately to attain. It matters little by whom those inventions are first given to the world. The learning, the science, the arts of Europe are as much ours as though they had originated in America; they advance us in the scale of existence in the same manner as though they were indigenous here; and as well might we refuse to improve our agriculture, by the importation of better varieties of grains, or plants, or animals, as to shut out or discourage those improvements in the arts or sciences which are first discovered in a foreign country. This is a Chinese policy, unworthy the intelligence and civilization of our age and country. A feeling of national prejudice, or a disposition to encourage the immigration of foreign inventors, may urge a continuance of the discrimination in favor of the home applicant for a patent; but that philanthropy which embraces within its scope all the children of our common parents, and that enlightened self-interest which rejects not a reciprocity of benefits by which the general welfare of all is manifestly promoted, alike forbid a continuance of this illiberal regulation.

Fully confident that the interests of the country and the usefulness of this office would be alike promoted by the course herein recommended, the candid consideration of Congress is again invited to this subject; and some reasons are given in support of the proposed change, additional to those presented in the two last reports of this office.

All which are respectfully submitted.

CHARLES MASON.

ALPHABETICAL LIST OF PERSONS WHOSE PATENTS HAVE EXPIRED  
DURING THE YEAR 1855, WITH THEIR INVENTIONS OR DISCOVERIES,  
AND CLASS.

No.	Patentees.	Inventions or discoveries.	Class.
2035	Abbe, Alanson .....	Corsets.....	XXI.
2265	Abbott, John.....	Paving blocks of wood, prismatic.....	IX.
1940	Adams, Elizabeth.....	Corsets.....	XXI.
2204	Aldrich, Elisha F.....	Propeller.....	VII.
2351	Allen, Horatio ....	Cocks, stop.....	XI.
2227	Allen, Horatio .....	Valve of steam-engine, cut-off.....	VI.
2326	Allen, John P.....	Bedsteads, securing and fastening rails of ..	XVII.
	Allen, Samuel S.....	Husking and shelling corn.....	Addit'l imp't.
2322	Allison, Peter and Wm. C....	Axle of railroad car, strengthening .....	X.
2365	Anderson, Levi.....	Files, cutting.....	II.
2276	Andrews, Solomon. (Improvement on patent of January 11, 1836.)	Lock, door, combination.....	II.
1977	Andrews, Solomon.....	Lock, door, combined snail wheel .....	II.
	Arnold, Edward. (See Chas. B. Rogers.)		
2036	Arnold, Job.....	Press, cheese .....	XII.
1987	Austin, Frederick J.....	Inking type, machine for.....	XVIII.
2134	Austin, Frederick J.....	Paper, cutting, and trimming books.....	III.
	Axtell, Jehiel F. (See Thos. D. Burrall.)		
2150	Babcock, Joseph B.....	Engine, fire .....	XI.
1981	Backus, John and Evens .....	Stoves, parlor.....	V.
2172	Bailey, Thos. R., and Ezra Rich.	Smut machine.....	I.
2390	Baldwin, David .....	Smut machine.....	I.
2297	Ball, Jonathan .....	Ferules of canes, &c., bottom end of .....	II.
2182	Ballard, William .....	Spikes and nails, forming.....	II.
1982	Barrett, Asa .....	Engine, fire .....	XI.
1935	Batchelor, Solomon C.....	Barge and army boat, portable safety.....	VII.
2340	Beach, Benjamin .....	Slitting timber and making splints, laths, &c.	XIV.
2161	Beach, Waldren, and Ephraim Lukens.	Brick machine .....	XV.
2156	Bean, Alexander F.....	Stoves, cooking and heating.....	V.
2045	Beard, Ebenezer.....	Propeller, screw.....	VII.
	Beck, Levi. (See Jacob Demuth.)		
2384	Beers, Jonathan T.....	Smut machine, cleaning grain, &c.....	I.
2264	Benson, Robert N.....	Pile-driving machine .....	IX.
2193	Bentz, Samuel.....	Smut machine, cleaning grain, &c.....	I.
	Bickford, Wm. A. (See Lemuel Bolles.)		
2050	Bissell, John B.....	Stoves, cooking.....	V.
2307	Bissell, Levi .....	Springs, railroad cars, &c., in which compressed atmospheric air, &c., is employed.	X.
2355	Blanchard, Alonzo L.....	Stoves, parlor and dumb, combined .....	V.
2069	Blanchard, Hiram .....	Stoves, cooking.....	V.
2194	Bogardus, James.....	Mill, universal, for grinding, hulling, &c.	XIII.
1979	Bolles, Lemuel, Jedediah Prescott, and Wm. A. Bickford.	Press, cotton, hay, &c .....	XII.
1945	Boninger, Rudolph, and Gustave, assignees of M. J. Funcke.	Sulphate of alumine, process of manufacturing.	IV.
	Bowman, Benj. (See Jacob Demuth.)		
2049	Bradley, George.....	Boilers, steam, ascertaining pressure of steam.	VI.
2165	Brett, James .....	Screw wrench .....	II.
2071	Bridges, Albert, and Charles Davenport.	Carriages, railroad .....	X.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
	Briggs, Jedediah. (See Stephen Chubbuck.)		
2312	Brown, Charles G.....	Brick machine.....	XV.
1956	Brown, Josiah, assignee of Theophilus Goodwin.	Alarm, fire.....	VIII.
2385	Brown, R. B.....	Springs, carriage.....	X.
2127	Bryant, William.....	Saw-mill.....	XIV.
2398	Bucey, Joseph.....	Press, tobacco.....	XII.
2162	Buck, Henry A.....	Smut machine.....	I.
2325	Bulkley, William, and Otis M. Inman.	Tin and other metals, cutting.....	II.
	Bullock, Isaac. (See Perry G. Gardner.)		
2012	Burger, Henry.....	Sawing machine, cross-cut.....	XIV.
	Burgess, Phineas. (See Daniel Dodge.)		
3409	Burnham, George.....	Inkstand.....	XVIII.
	Burrall, Thomas D.....	Propelling threshing machines by horse power.	Dis- claim- er.
2258	Butrick, R. P.....	Stoves, cooking, railway.....	V.
1964	Calderhead, Alex.....	Loom, weaving figured cloths, Jacquard machinery for.	III.
2278	Calvert, Francis A.....	Wool, &c., combing and preparing.....	III.
2373	Calvert, Francis A.....	Wool and cotton, ginning, burring, or cleaning.	III.
2175	Calvert, Wm. W. and Alanson Crane.	Wool and cotton, cleaning from burrs, &c.	III.
2233	Campbell, Ethan.....	Boilers, steam, apparatus for supplying with water.	VI.
2041	Campbell, John A.....	Truss for prolapsus uteri.....	XX.
1966	Carey, Stephen.....	Paving, blocks of wood, &c.....	IX.
2411	Cary, Thomas C.....	Window-shutter fastenings.....	II.
2238	Carr, George.....	Lamps, burning lard, tallow, &c.....	V.
2286	Carr, William H., assignee of Thomas Shepherd.	Hinges, butt, &c., casting of iron, brass, &c.	II.
2195	Carsley, William.....	Harpoon.....	VII.
2358	Cate, Norman S., and James H. Putnam.	Lamps, burning lard, tallow, &c.....	V.
2094	Cavanaugh, Luke F.....	Stump extractor.....	IX.
	Chaffee, Edwin M. (See Chas. B. Rogers & E. Arnold.)		
3304	Chapman, John Lee.....	Cocks for hydraulic and pneumatic purposes.	XI.
2059	Chase, A. Ralston.....	Press, seal.....	XII.
2216	Chase, Samuel L.....	Stoves, cooking.....	V.
	Chase, Samuel L.....	Stoves, cooking.....	Reissue.
2222	Cheek, Pendleton.....	Millstones, dressing, with ventilators for cooling the flour.	XIII.
2017	Cherry, George W.....	Excavating ditches.....	IX.
2159	Childs, Charles D.....	Smut machine.....	I.
2246	Chilson, Gardner.....	Grates of stoves, constructing and arranging.	V.
1926	Chubbuck, Stephen, & Jedediah Briggs.	Furnaces, blast.....	II.
2074	Church, Damon A.....	Mowing, harvesting machine for cutting, threshing, and winnowing grain.	I.
2072	Church, Damon A.....	Press, cheese.....	XII.
2051	Church, Damon A.....	Sawmill dogs.....	XIV.
2007	Churchill, Alfred.....	Mowing, harvesting grain.....	I.
2317	Clark, John.....	Pump, valves and pistons of.....	XI.
1936	Clark, Aaron.....	Silk reel and light machinery, driving with the foot.	III.
	Cochrane, John. (See William Craig.)		
2054	Coe, Loring.....	Screw wrench.....	II.



*Alphabetical list of expired patents—Continued.*

Nq.	Patentees.	Inventions or discoveries.	Class.
2356	Cole, Thomas .....	Bedstead, cutting tanons and boring holes in the rails of.	XVII.
2126	Colman, Sidney E. ....	Fulling mill .....	III.
2118	Collins & Wistar, assignees of Stacy Costill.	Lathe, turning handles, poles, &c. ....	XIV.
1947	Conklin, Thomas .....	Brick press .....	XV.
2395	Connison, Alex. ....	Springs, pneumatic, piston of, &c. ....	X.
2179	Cooch, Richard M. ....	Mowing, cutting and gathering flax, hemp, &c.	I.
2237	Cook, David B. ....	Suspender straps, attached to pantaloons.	XXI.
	Cooper, Thomas. ....	Puddling furnaces for manufacturing iron with anthracite coal.	Reissue.
2125	Copeland, Charles W. ....	Steam engine, low pressure, arranging to adapt its parts for vessels in ocean service.	VI.
2313	Copeland, George M. ....	Grist mill, bush for. ....	XIII.
2066	Coppuck, James. ....	Smut machine. ....	I.
2008	Cornelius, Robert. ....	Lamps, gas. ....	V.
2329	Cornell, Thomas J. ....	Stone cutting and dressing. ....	XV.
2019	Cordes, James J., & Edward Lock.	Steam engine, rotary. ....	VI.
	Costill, Stacy. (See Collins & Wistar.)		
2334	Cottrell, Albert. ....	Bridge building .....	IX.
2377	Craig, Wm., & John Cochran..	Loom temples, self-acting rotary .....	III.
1973	Crane, Aaron D. ....	Clocks. ....	VIII.
1962	Crane, Ebenezer, & Alanson..	Carding machine, cotton or wool .....	III.
	Crane, Alanson. (See W. W. Calvert.)		
2274	Cromwell, Joseph and Henry F.	Plough, wrought iron. ....	I.
2321	Crosby, Pearson. ....	Saw mill, re-sawing boards, &c. ....	XIV.
	Cross, Jefferson. ....	Cooking stove .....	Addit'nl imp't.
	Crossman, Alfred B. (See Jos. B. Wilson.)		
	Cushwa, Benjamin. ....	Self-adjusting log brace. ....	Addit'nl imp't.
2378	Custis, John. ....	Raising sunken vessels, machine for. ....	IX.
1960	Damon, Isaac .....	Gridiron, constructing. ....	V.
1974	Dampier, C. E. ....	Balance, weighing apparatus. ....	XII.
2077	Danforth, Charles .....	Spinning and twisting machinery, improvements applicable to.	III.
1983	Danforth, Charles .....	Spinning, cotton roping. ....	III.
2277	Darling, Riley. ....	Crackers, making .....	XVII.
	Davenport, Charles. (See Alfred Bridges.)		
	Davenport, John A. (See John G. Hotchkiss.)		
2239	Davenport, Moses .....	Horse power. ....	XIII.
2209	Davis, Perry .....	Steel, mode of hardening. ....	II.
2211	Davis, Perry .....	Stove pipes, ornamental slides or plates for covering flues of.	V.
2215	Davis, Perry .....	Windmill .....	XI.
2286	Davison, William .....	Copy books, and method of binding the same.	XVIII.
2287	Davison, William .....	Pen, fountain, &c. ....	XVIII.
	Delcambre, Adrian. (See Jas. H. Young.)		
2087	Demuth, Jacob, Benjamin Bowman, and L. Beck.	Smut machine. ....	
2337	Derby, Joseph H. ....	Corn sheller .....	I.
2105	Detterer, Isaac. ....	Files or ready binders for pamphlets, &c.	XVIII.
2226	Dillaway, Hiram. ....	Glass, moulds for pressing .....	XV.
2147	Dircks, Henry. ....	Wheels for rail and other roads. ....	X.
2281	Dodge, Daniel, and Phineas Burgess.	Dock, floating dry. ....	IX.

*Alphabetical list of expired patents—Continued.*

Patentees.	Inventions or discoveries.	Class.
Albert.....	Balance, portable .....	XX.
lass, Stephen P. W.....	Legs, apparatus for relief of debility in the.	XX.
lass, Stephen P. W.....	Power, maintaining, to drive machinery..	XIII.
William.....	Springs, railroad cars, &c.....	X.
n, John.....	Raising water, endless chain bucket.....	XI.
st, John. (See Newhall- Wilkins.)		
, Michael B.....	Camphene lamp.....	Addit'nl imp't.
s, Josephus .....	Condensers of steam engines, and appara- tus for supplying the boilers with water.	VI.
rds, David A.....	Springs, elliptical.....	X.
head, Thomas .....	Spectacles, forming joint on end piece of frame.	VIII.
th, Robert.....	Canal lock gate .....	IX.
, Herman C.....	Bedstead, fastening of.....	XVII.
, John A.....	Steam engine, locomotive propelling by stationary power.	VI.
t, David.....	Keyhole of door and other locks, closing and opening.	II.
s, Russell .....	Steering steamboats, apparatus for.....	VII.
er, Sylvanus .....	Window blind fasteners.....	II.
r, John. (See J. M. Moss.)		
m, Joel.....	Pump.....	XI.
m, Joel.....	Pump, double-acting, for raising and forcing water.	XI.
m, Joel.....	Pumps, double acting suction and force...	XII.
ur, Joseph, jr.....	Stoves, parlor .....	V.
Almond D.. (See N. W. ..)		
Joseph E.....	Stoves, air-tight or Arnott .....	V.
Nelson W., assignee of mond D. Fisk.)	Stoves, cooking.....	V.
rald, Daniel.....	Boats, sub-marine gun.....	VII.
rald, Daniel .....	Propeller.....	VII.
bbon, John .....	Trunks, travelling .....	XVI.
er, Lewis.....	Garments, tailors, instruments and mode of measuring.	XXI.
, Edwin. (See Timothy bert.)		
, Charles P.....	Crackers, cutting.....	XVII.
t, Martin C.....	Gudgeon, applying friction rollers to....	XIII.
, Charles.....	Forges, blacksmiths', bellows-box attached	II.
r, Leonard.....	Door-fasteners, mortise latch.....	II.
Selah W., and Arstas ry.	Mowing scythes, fastening the thole upon the snath.	I.
is, Joseph .....	Boats, life and other.....	VII.
is, Joseph .....	Constructing boats, vessels, &c.....	VII.
b, Richard.....	Spark arresters .....	VI.
James.....	Steam-engine, repeating expansive engine.	VI.
te, Max. J. (See Rudolph niger.)		
Titus D.....	Butter, making and pressing .....	Addit'nl imp't.
le, James, and Joseph S. l.	Candles, moulding .....	IV.
r, Samuel, and Henry rtzingrover.	Burning, lime.....	Addit'nl imp't.
ner, Perry G.....	Propeller, arranging paddles of paddle wheels.	VII.
ner, Perry G., assignee mac Bullock.	Car, railroad, turning curves.....	X.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
2288	Garlin, William.....	Valve of steam-engines, throttle.....	VI.
2300	Garretson, John G.....	Water-wheels.....	XI.
2109	George, William S.....	Shingles, riving and dressing.....	XIV.
	Gibbons, Joseph.....	Seed-planters.....	Addit'nl imp't.
2167	Gilbert, Lemuel.....	Piano forte.....	XVIII.
1970	Gilbert, Timothy.....	Piano forte action, part of.....	XVIII.
1971	Gilbert, Timothy, assignee of Edwin Forbes.	Piano forte, hammer heads used in.....	XVIII.
2289	Gleason, Lyman.....	Splints, cutting, for manufacturing brooms, &c.	XIV.
2009	Goell, Alvin C.....	War rockets, boring.....	XIX.
1986	Goell, Alvin C.....	War rockets, press for filling.....	XIX.
1998	Gold, Job S.....	Refrigerator.....	XVII.
2168	Gold, Stephen J.....	Lamps, burning camphene, &c.....	V.
1975	Goldsborough, Nicholas.....	Corn-sheller.....	IX.
2328	Goodell, Frederick, and Thos. W. Harvey.	Saw-mill, self-setting.....	XIV.
2048	Goodwin, Samuel.....	Cement, hardening manufactures of, and rendering them impervious to moisture.	IV.
1956	Goodwin, Theophilus. (See Jo- siah Brown.)		
2311	Goudy, Levi L.....	Carding machine, condenser for woollen..	III.
1965	Grandy, Lewis, and Thomas Osgood.	Cannon balls, &c., manufacturing from malleable iron, lead, &c.	XIX.
2308	Granger, Ransselaer D.....	Flues of elevated ovens combined with cooking stoves.	V.
	Grannis, Sidney S. (See Abraham Howe.)		
	Graves, Joseph S. (See R. C. Stiles.)		
2261	Gray, J. B.....	Lock, permutation door.....	II.
2121	Green, Benjamin H.....	Door, instrument for fastening on the in- side.	II.
2291	Greene, Lewis.....	Smut machine.....	I.
2039	Greenough, Benjamin F.....	Lamps, improvement in.....	V.
2267	Griffith, George R.....	Bales of cotton, floating them in form of raft.	VII.
1996	Grimes, William C.....	Hulling and cleaning clover seed.....	I.
2359	Guérin, Napoleon E.....	Life preserver or buoyant dress.....	VII.
2332	Guilford, Simeon.....	Tanning hides, &c., process of.....	XVI.
1937	Hacker, George S.....	Car bodies, railroad.....	X.
2028	Hale, Joseph W.....	Flannels, &c., wetting.....	III.
2110	Hall, Elias, jr.....	Boots, treeing.....	XVI.
	Hall, William. (See Enoch Robinson).		
	Hall, William M.....	Beehive.....	Addit'l imp't
2161	Hamilton, Farwell H.....	Screws, wood, cutting.....	II.
2223	Hampson, John.....	Blinds, Venetian, retaining slats of, in desired position.	IX.
2244	Hampson, John.....	Boilers, steam, supplying with water, self-acting apparatus for.	VI.
2116	Hampson, Robert.....	Block printing on woven fabrics of cotton, &c.	XVIII.
	Hanson, John and Charles. (See B. and H. B. Tatham).		
2113	Hardesty, Thomas G.....	Press, tobacco.....	XII.
2309	Harrington, Daniel.....	Garments, pockets of.....	XXI.
	Harris, Benjamin. (See Wm. W. Hunter).		
1948	Harris, Robert S.....	Spike heading.....	II.
	Harvey, Thomas W. (See Frederick Goodell).		
2111	Hawkes, Charles W.....	Press, cotton, hay, &c.....	XII.
2393	Heath, George.....	Canal lock, gate sluice.....	X.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
1934	Hemmenway, Benjamin.....	Lamp, Argand, constructing .....	V.
1930	Henry, Pierre D.....	Raising water, hydraulic wheels for.....	XI.
2148	Herrick, Webster.....	Hulling rice and other grain.....	I.
2203	Heurteloup, C. L. S.....	Fire-arms, portable .....	XIX.
2270	Heygel, Joseph.....	Smut machine, cleaning and separating garlic, &c., from grain.	I.
	Hill, Joseph S. (See James Gamble).		
2119	Hill, Moses J.....	Tooth extractor.....	XX.
2206	Hill, William B.....	Grates of limekilns, &c.....	V.
2023	Hobday, John, and William J. Cocke.	Propeller, wheel for propelling steam- ships, and wind or water-wheel for mills.	VII.
2135	Hobe, Charles F.....	Extension tables, slides of.....	VIII.
2173	Hodges, Nathaniel F.....	Water-wheels, reacting .....	XI.
2376	Heggan, James M.....	Latch, door.....	II.
2366	Hogle, Sidney S.....	Lathe, universal chuck .....	XIV.
2112	Hogle, Sidney S.....	Pump .....	XI.
2115	Holmes, John B.....	Hoisting, machinery for.....	XII.
1927	Holmes, Philip B. and William Pedrick.	Hides, raw and leather, cutting into strips for manufacture of ropes, &c.	XVI.
2306	Hopkins, Lansing E.....	Boilers, steam, caldron and furnace com- bined.	VI.
1951	Hopkins, William R.....	Barometer.....	VIII.
2361	Hotchkiss, John G., J. A. Da- venport, and J. W. Quincy.	Knobs, glass, for locks, curtain pins, &c., attaching necks, shanks, and screws, &c., to.	II.
2197	Hotchkiss, John G., J. A. Da- venport, and J. W. Quincy.	Knobs of all kinds of clay, &c., making..	XV.
2221	Houpt, John .....	Hydrostatic or hydraulic press, for pressing cotton.	XI.
2273	Howe, Abraham, and S. S. Grannis.	Loom, weaver's harness, wire heddles for.	III.
2299	Howe, Abraham and S. S. Grannis.	Loom, weaver's harness, wire heddles for.	III.
	Howe, Elias, assignee of Jos. C. Smith.	Palmleaf for stuffing beds, sofas, &c.....	Reissue.
2013	Howe, John J.....	Pin-making machine.....	II.
2086	Hubball, Ebenezer.....	Cocks for hydrants .....	XI.
1972	Hubball, Ebenezer, assignee of Joseph Martin.	Cocks for hydrants .....	XI.
2027	Hubbard, Noadiah W.....	Water-wheels, current.....	XI.
	Hubbell, William W. (See Leonard Phleger.)		
2184	Hunter, David.....	Spinning, ring spinner.....	III.
2004	Hunter, William W., & Benja- min Harris.	Constructing steam vessels and propelling.	VII.
2063	Hurd, Joseph, jr.....	Chimney, apparatus to prevent smoking, &c.	V.
	Hyatt, Theodore and Thad- deus. (See N. T. Winans.)		
	Inman, Otis M. (See William Bulkley.)		
	Jackson, Asa. (See David Phi- lips.)		
1923	Jackson, Edwin W .....	Power, graduating the velocity of moving bodies.	XIII.
2032	Jayne, Zophar .....	Truss, reducible hernia, mode of treat- ing, &c.	XX.
2357	Jenks, Otis.....	Stoves, parlor or open grates for burning anthracite and other coal.	V.
2254	Jennings, Isaiah.....	Lamps, burning volatile ingredients.....	V.
2339	Jennings, Thomas Y.....	Balance, platform.....	XII.
1976	Jewett, Benjamin F.....	Plough, attaching the mouldboard and sheath, &c., by rivets.	I.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
2295	Johnson, Charles .....	Motion of fly-wheel or slide, to multiply..	XIII.
2401	Johnson, George .....	Syphons, &c.....	XI.
2391	Johnson, John.....	Polishing plates used in taking likenesses, apparatus for.	XVIII.
2138	Johnson, Nelson.....	Water-wheels .....	XI.
2303	Jones, Joseph .....	Seeding, planting machines, &c.....	I.
2000	Jones, Orlando .....	Starch, manufacture of .....	IV.
2280	Jones, Richard.....	Press, screw and application to the pressure of elaine from tallow.	XII.
2218	Jones, Thomas M .....	Stoves, air-tight.....	V.
	Joslyn, Mathews. (See B. B. Mason.)		
2117	Julian, William F.....	Propeller, paddle, and water-wheels, bracing arms of.	VII.
2030	Kaighn, Elias .....	Tuyere, blacksmith's, &c.....	II.
2100	Kennedy, Henry P.....	Chair, recumbent .....	XVII.
2368	Kilburn, George, and John J..	Cutting blubber.....	XVII.
2240	King, Harmon .....	Constructing berth of vessels .....	VII.
2010	King, James .....	Mortising machine.....	XIV.
1990	King, James .....	Saw mill, head block of, &c.....	IV.
2095	King, John B .....	Straw cutters. . . . .	I.
2310	Kingsley, Nathan P.....	Cooking ranges .....	V.
2155	Lampson, Silas.....	Mowing, scythe, securing upon the snath and fastening the nib to the same.	I.
2348	Laubach, Joseph .....	Hearth, blacksmith's or forge .....	II.
2272	Law, Hervey .....	Planing boards and timber.....	XIV.
2122	Le Patourel, James.....	Beehives .....	I.
2410	Lear, Peter .....	Propeller paddle, vibrating.....	VII.
2236	Lee, Samuel A.....	Pump, rotary .....	XI.
2171	Lewis, Clark .....	Water-wheels.....	XI.
1992	Lewis, Robert B.....	Attaching the bristles to brushes .....	XVII.
	Linacree, Thos. (See Samuel Welsh.)		
2342	Lincoln, Levi .....	Cocks and molasses gates .....	XI.
1955	Lindsey, Ichabod .....	Carrier's beam, constructing face of.....	XVI.
2124	Little, Samuel H.....	Horse power.....	XIII.
	Little, Samuel H.....	Horse power.....	Reissue.
2374	Lize, Louis.....	Steam engine, &c.....	VI.
	Lock, Edward. (See James J. Cordes.)		
2025	Lockwood, David C.....	Excavating earth .....	IX.
	Long, Stephen H.....	Bridge, wooden brace.....	Reissue.
	Loring, Thomas. (See Thomas Shepherd.)		
2120	Lowry, James B., and Philander Eggleston .....	Saw mill.....	XIV.
	Lukens, Ephraim. (See Waldren Beach.)		
2098	Luther, Harvey .....	Clothes-horse, connecting frames of.....	XVII.
2146	Luther, John.....	Screws, metallic.....	II.
2210	Mallory, Meredith.....	Propeller.....	VII.
2038	Manning, Cephas.....	Staves, cutting .....	XIV.
2053	Manning, Nathaniel L.....	Feathers, drying, whipping, and cleaning.	XVII.
2229	Mardock, Thomas .....	Saddles, spring .....	XVI.
2033	Marsh, James S., and Asa Munger.....	Heating water, steaming vegetables, &c..	V.
	Martin, Joseph. (See Ebenezer Hubball.)		
2217	Martin, Prosper.....	Floating batteries.....	VII.
1989	Mason, Belden B., and Mathews Joslyn.		
	Mason, John C. (See Draper Ruggles.)	Stump extracting .....	IX.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
	Matthews, Elbridge G. (See Draper Ruggles.)		
2202	Mayo, James C.....	Saw mill, portable .....	XIV.
2236	McDonald, Richard.....	Constructing steam vessels to prevent sinking.....	VII.
2349	McEwen, William.....	Forges and furnaces, water backs for.....	II.
2024	McFarland, Corey.....	Palm leaf, machine for splitting .....	XXII.
2065	McKean, James P.....	Window shutter and blind fastener.....	II.
2399	McMillen, Reuben.....	Plough, cast-iron.....	I.
2398	McMillen, Reuben.....	Steam generating combined cooking oven and boiler.	VI.
2068	McPhetridge, C. A.....	Gin, cotton, saw.....	III.
	Mears, John. (See David Prouty.)		
2185	Meschutt, Jas. M.....	Bedstead, sofa.....	XVII.
2147	Miller, Ezra L.....	Seeding, planting corn and other seed ...	I.
2106	Miller, L. B. and E.....	Garments, tailors' measures for.....	XXI.
2399	Mims, S. J. and M.....	Plough, altering the set of the same.....	I.
2102	Mitchell, Enos.....	Churn, double dasher.....	I.
2073	Moore, J. Francis.....	Horse power.....	XIII.
	Morison, B.....	Balance for weighing.....	Addit'l imp't. III.
2130	Morris, Edmund.....	Silk-worms, mode of feeding, and apparatus for.	
2243	Morris, William.....	Wells, Artesian, boring, &c.....	IX.
1957	Moss, Isaac M., assignee of John Farlee.	Inkstand, capillary wick, &c.....	XVIII.
2228	Mott, Jordan L.....	Steam engine, locomotive, increasing adhesion of driving wheels.	VI.
2314	Monroe, Joseph.....	Carding-machine, cotton or wool, &c.....	III.
2052	Murdock, Zina K.....	Knives, &c., handles for.....	XXII.
	Munger, Asa. (See James S. Marsh.)		
2406	Naglee, Henry M., and Thomas Raney.	Railroad scrapers, &c.....	IX.
1954	Nelson, John.....	Spinning wool, domestic spinner for.....	III.
2344	Nevins, Wm. R.....	Crackers, cutting.....	XVII.
1997	Newbery, George J.....	Fabrics, water-proofing.....	III.
	Newhall, Daniel.....	Protecting trees from canker worm.....	Addit'l imp't. XVIII.
2330	Newhall, Daniel B.....	Pianoforte.....	XVIII.
2061	Newhall, Daniel B., and Levi Wilkins, assignees of John Dwight, part inventor with said D. B. Newhall.	Pianoforte, keys in.....	XVIII.
2259	Nichols, Howard.....	Steering brace for boats.....	VII.
2145	Nicolson, Samuel.....	Signals, railroad alarm.....	VIII.
2220	Nolt, Jonas.....	Smut machine, cleaning grain.....	I.
	Nourse, Joel. (See Draper Ruggles.)		
1933	Olds, Calvin.....	Seeding, seed drill or corn planter .....	I.
2207	Oliver, Samuel.....	Distilling, art of, improvement in.....	IV.
2284	Orcutt, William A.....	Lightning conductors, attaching the receiving and discharging points.	VIII.
1961	Osborn, James P.....	Harness, horse collars, stretchings, &c....	XVI.
	Osgood, Thomas. (See Lewis Grandy.)		
	Page, Albert G. (See Abel Simonds.)		
2174	Page, George.....	Saw mill, portable circular.....	XIV.
2369	Page, John A.....	Furnace for heating air and warming apartments.	V.
2057	Palmer, William B.....	Smut machine.....	I.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
2183	Parkinson, Thomas .....	Harness, horse collars, cutting leather for.	XVI.
2122	Patourel, James Le. (See Le Patourel.)	Beehives .....	I.
1953	Patterson, James H. ....	Paving, blocks of wood, &c. ....	IX.
2247	Payne, Charles .....	Salting animal matters. ....	IV.
2058	Payne, Elisha D., and E. Woodruff.	Screens for sifting coal, grain, &c. ....	V.
	Pedrick, William. (See Philip B. Holmes.)		
2177	Pendergast, Isaac S. ....	Shoemakers' paring knives. ....	XVI.
1999	Pennock, Moses and Samuel...	Seeding, seed planters .....	I.
2029	Perkins, William .....	Crackers, cutting .....	XVII.
2014	Perrin, William .....	Dovetails, cutting square joint. ....	XIV.
2103	Philips, David .....	Gin, cotton, railroad. ....	III.
2001	Philips, David .....	Saw mill .....	XIV.
2080	Philips, David, and Asa Jackson	Winnowing grain, fanning mills. ....	I.
2260	Philips, Henry F. ....	Axle and hub for carriage wheels. ....	X.
	Philips, James T. (See John Price.)		
2141	Phleger, Leonard, assignee of W. W. Hubble.	Spark arrester. ....	VI.
2142	Phleger, Leonard, assignee of W. W. Hubble.	Spark arrester. ....	VI.
2143	Phleger, Leonard, assignee of W. W. Hubble.	Spark arrester. ....	VI.
2144	Phleger, Leonard, assignee of W. W. Hubble.	Spark arrester. ....	VI.
2343	Pierce, Thomas .....	Churn .....	I.
2191	Pitney, Joseph T. ....	Speculum ani. ....	XX.
2268	Pitts, Hiram A. ....	Beehives .....	I.
2282	Platt, Josiah .....	Grist mill .....	XIII.
2219	Poole, Henry S. ....	Buttons, attaching to cloth. ....	XXI.
	Porter, Rufus. (See John F. Schermerhorn.)		
	Prescott, Jedediah. (See Lem'l Bolles.)		
1994	Price, Jehu, and Jas. T. Philips.	Bridges, truss frames of. ....	IX.
2060	Prince, John D. ....	Dyeing black, iron liquor used as mordant for.	IV.
2369	Proctor, Leonard .....	Washing machine. ....	XVII.
2199	Prosser, Thomas .....	Buttons, manufacture of .....	XXI.
2132	Prouty, David, and John Mears.	Plough, construction of .....	I.
2225	Pullman, Lewis .....	Buildings, &c., removing .....	XII.
	Putnam, James H. (See Norman S. Cate.)		
2083	Putnam, James R. ....	Removing bars, &c., from harbors, rivers, &c.	IX.
2394	Quilliard, Claude S. ....	Furnaces, combination of, for manufacturing wrought iron directly from the ore.	II.
	Quincy, John W. (See John G. Hotchkiss.)		
2252	Rand, John .....	Paint, &c., vessels for preserving. ....	IV.
	Raney, Thomas. (See H. M. Naglee.)		
1980	Ransom, Franklin, and Uziah Wenman.	Water, applying, to fire engines, &c. ....	XI.
2201	Ray, Fowler M. ....	Bumper and draught springs on railroad cars.	X.
	Ray, Fowler M. ....	Springs for railroad cars .....	Reissue.
2006	Read, Josiah M. ....	Crimping leather, clamps for .....	XVI.
2266	Reading, Pearson .....	Corn sheller .....	I.
1963	Reed, Jeremiah M. ....	Horse power, endless floor .....	XIII.
2055	Reed, Jesse .....	Pumps .....	XI.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
2099	Reichenback, Frederick C.....	Piano-forte, horizontal.....	XVIII.
2067	Rice, Zalmon .....	Smut machine, cleaning and winnowing grain:	I.
2367	Richards, William T.....	Springs, elliptical, forming the sockets of.	X.
1967	Richardson, Alpha.....	Splitting leather .....	XVI.
2170	Richardson, Elliott.....	Press, tobacco .....	XII.
2129	Richman, Christian and Charles Rider, Justus. (See William H. Rider.)	Lamps, construction of.....	V.
2002	Rider, William H., assignee of Justus Rider.	Plough, combined with a cultivator and planter, for ploughing, &c., at one operation.	I.
2318	Riley, Salmon C.....	Boiler or steamer, construction of.....	V.
2200	Ring, Elihu.....	Springs and levers to sustain the body of wagons.	X.
2044	Robbins, Henry H.....	Braid, pressing, after it has been trimmed.	III.
1984	Robbins, Henry H.....	Braid, straw, trimming.....	III.
1942	Robbins, Martin.....	Balance, weighing apparatus.....	XII.
2305	Roberts, Richard .....	Spinning, self-acting mules, billies, jennies, &c.	III.
1978	Robinson, Clark H.....	Stoves, constructing.....	V.
2404	Robinson, Eli C .....	Ovens, elevated, combined with cooking stoves.	V.
1995	Robinson, Enoch, and William Hall.	Latch, door, and other locks.....	II.
2248	Robinson, Enoch, and William Hall.	Window fastenings.....	II.
2096	Robinson, Francis and Hanson.	Tanning, removing wool, &c, from skins of animals	XVI.
2392	Robinson, Robert.....	Canals and mill-dams, waste gates, opening and closing.	IX.
2232	Rocher, Michel.....	Cabooses adapted to distil salt water .....	V.
2279	Rodgers, Henry .....	Cocks, or faucets, &c.....	XI.
1939	Rodgers, Charles B., and Edward Arnold, assignee of E. M. Chaffee.	Caoutchouc, manufacturing balls of.....	IV.
2347	Rogers, Isaiah.....	Bridge, spiral brace cylinder.....	IX.
2327	Rogers, Thomas B.....	Fabrics, waterproofing.....	III.
2114	Rohrer, Jeremiah .....	Saw-mill, sustaining logs in.....	XIV.
2250	Root, James.....	Stoves, cooking.....	V.
2262	Ross, Samuel.....	Hair seating, figured damask .....	III.
1993	Ruggles, Draper, J. Nourse, and J. C. Mason, assignees of E. G. Matthews	Ploughs, manufacture of.....	XIV.
2046	Sadler, M. C.....	Stoves, cooking.....	V.
2090	Samson, Thomas.....	Packing tobacco, staves or billets of cast iron for.	XII.
1968	Sanderson, Charles.....	Iron ores, art of smelting, improvement in, and in furnaces applicable thereto.	II.
2016	Sawyer, Henry R.....	Fireplaces and chimney-stacks in buildings.	V.
1938	Sawyer, Samuel.....	Door-spring .....	II.
2040	Schermerhorn, John F., and Rufus Porter.	Seeding, tilling and planting at same operation, &c.	I.
2078	Seay, Thomas.....	Gold, separating from its ores, &c., and apparatus for.	II.
2153	Seely, Oran W.....	Boiler, steam, and evaporator, improvement on Marvin & Seely's, patented August 28, 1840.	VI.
	Shaler, Reuben.....	Scraping hides.....	Add'tl imp't.
1958	Shaw, Joshua.....	Fire-arms, manner of discharging.....	XIX.
2251	Sheldon, Samuel.....	Gristmill, conical .....	XIII.
2213	Shepard, William A.....	Stoves, cooking.....	V.



*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
2005	Shepherd, Thomas. (See William H. Carr.)		
2082	Shepherd, Thomas, and Thos. Loring.	Models for casting butt-hinges. ....	II.
2315	Sherwood, John P. ....	Latch of door-locks. ....	II.
2379	Sim, William. ....	Vices, making jaws of. ....	II.
2275	Simonds, Abel, and Albert G. Page.	Scythés, turning and bending heel of. ....	II.
2352	Slocum, Samuel. ....	Pins, sticking into paper, machine for. ....	II.
2353	Smith, Christopher H. ....	Spectacles, construction of. ....	VIII.
2128	Smith, Francis P. ....	Propeller. ....	VII.
2383	Smith, Hernon. ....	Steam-engine, rotary. ....	VI.
1949	Smith, John L. ....	Water-wheels. ....	XI.
1941	Smith, Joseph C. (See Elias Howe.)		
1959	Smith, Normand. ....	Flues, chimney, valves or dampers for. ....	V.
2259	Smith, Thomas B. ....	Ice, forming. ....	XXII.
	Smith, Thomas W. ....	Brick-press. ....	XV.
	Snead, Albert. ....	Press, tobacco. ....	XII.
	Snider, Isaac. ....	Plough, self-sharpening. ....	Addit'nl imp't.
	Southworth, Daniel H. ....	Smut, machine for cleaning rice, &c. ....	Addit'nl imp't.
2230	Spaulding, Joel. ....	Cloth, folding and measuring. ....	III.
2354	Spaulding, Abiram. ....	Cooking ranges. ....	V.
2235	Spaulding, Samuel B. ....	Ovens, elevated, combined with cooking and other stoves. ....	V.
2176	Spear, Thomas J. ....	Ink, indelible writing. ....	IV.
	Spencer, William. ....	Dyeing yarn from beam. ....	Addit'nl imp't.
2031	Stadon, Shively. ....	Pump, cattle. ....	XI.
2375	Stanbrough, Ira. ....	Water-wheels, buckets, openings for admitting water on. ....	XI.
2075	Staub, Jacob. ....	Gudgeon, or pivot, and step of mill spindles, &c. ....	XIII.
1950	Stevens, Robert L. and Francis B.	Valves of steam engines, working, when the steam is cut off, &c. ....	VI.
2302	Stewart, J. A. ....	Steam engines, rotary. ....	VI.
2188	Stewart, Matthew. ....	Stoves or bakers for cooking purposes. ....	V.
2371	Stewart, jr., Mathew. ....	Stoves or furnaces, &c., fire chambers of. ....	V.
2372	Stewart, Robert. ....	Staves, sawing bilged, for barrels, &c. ....	XIV.
2386	Stiles, Riverius C., and J. S. Graves.	Tuyere, blacksmith's. ....	II.
2333	Stillman, O. M. ....	Loom, power, stopping, when west or filling fails. ....	III.
2070	St. John, John R. ....	Piston rods of steam engines, &c. ....	VI.
2056	Strong, Justin E. ....	Lightning conductors, connecting rods of. ....	VIII.
2190	Sturdevant, Lewis G. ....	Gin, cotton. ....	III.
	Swartzengrover, Henry. (See Samuel Garber.)		
2362	Sweet, Leonard T. ....	Gunpowder, corning or graining. ....	XIX.
2069	Sweet, jr., Samuel. ....	Propeller paddle. ....	VII.
2407	Taplin, John A. ....	Horse-power, portable, master-wheel of. ....	XIII.
2021	Tatham, Benjamin and Henry B., assignees of J. and C. Hanson.	Pipes and tubes from lead, &c. ....	II.
2296	Tatham, George N. and Benjamin.	Pipes or tubes of lead, tin, &c., machinery for making. ....	II.
2249	Taylor, Jesse. ....	Water wheels. ....	XI.
1944	Tentler, Aaron A. ....	Garments, taking measure and draughting. ....	XXI.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
	Tew, Latham T. (See Edward T. Williams.)		
2062	Thayer, Ansel.....	Boots and shoes, manufacturing, &c.....	XVI.
2149	Thomas, John.....	Dock, floating dry.....	IX.
2205	Thomas, R. S.....	Seeding, planting cotton seed.....	I.
2198	Thompson, Joel.....	Bedstead, cutting screws on the rails of...	XVII.
2186	Thurman, Silas T.....	Medicine for treatment of syphilis, &c....	IV.
2285	Tibbets, John G.....	Harness, blinds for horse bridles.....	XVI.
2331	Tillinghast, J. B.....	Silk-worms, cocoonery for.....	III.
2283	Tolles, Elisha.....	Steam engine, locomotive, distributing sand, &c., to produce adhesion of driving wheels.	VI.
2020	Torbet, Frances R.....	Steam engine, regulating pressure of steam	VI.
2091	Tough, John S.....	Lamp, Argand, constructing.....	V.
2187	Tough, John S.....	Measuring liquids, measures for.....	XI.
2408	Townsend, Ashley.....	Threshing, grain machines.....	I.
2181	Tracy, Andrew.....	Metal sheet, cutting.....	II.
2164	Trumbull, Earl.....	Bridge.....	IX.
2263	Turner, Daniel B.....	Kettles, potash, mode of setting.....	V.
2015	Tuttle, Jesse.....	Steam engine, rotary.....	VI.
2320	Tyler, Philos B., executor of Rufus Tyler.	Coin, apparatus for counting.....	VIII.
	Tyler, Rufus. (See Philos B. Tyler.)		
2160	Van Allen, C. D.....	Pump valve, &c.....	XI.
2026	Van Hoesen, Wm. C.....	Press, cotton.....	XII.
2022	Van Lean, Wm. W.....	Propeller, paddle wheels, constructing and arranging.	VII.
2061	Van Osdel, John M.....	Lancet, spring.....	XX.
2003	Van Osdel, John M.....	Windmill, horizontal.....	XI.
1932	Walcott, Truman.....	Shingles, cutting.....	XIV.
2136	Wall, Arthur.....	Compounds for coating metallic surfaces to prevent oxydation.	IV.
2137	Walter, Horatio N.....	Washing machine.....	XVII.
1988	Ward, Ezekiel G.....	Grist mill.....	XIII.
2178	Ward, Joseph H.....	Potash, leaching ashes in manufacture of..	IV.
2350	Warner, Chapman.....	Pump.....	XI.
1924	Warren, Edmund.....	Horse power.....	XIII.
2133	Washburn, Albert.....	Gin cotton, grates of saw.....	III.
2064	Waterman, George.....	Washing machine.....	XVII.
1969	Waterman, Henry.....	Steam engine and locomotive for railroad.	VI.
2234	Webb, Aug. V. H.....	Distilling, apparatus for separating alcohol from whiskey.	IV.
2079	Webb, Constant.....	Beehives.....	I.
2151	Weeks, John M.....	Beehives.....	I.
2245	Wells, Henry A.....	Felt cloths and hat bodies, shrinking.....	III.
2256	Wells, Henry A.....	Felt cloths, hardening.....	III.
2255	Wells, Henry A.....	Felt cloths, &c., fulling, milling, or plank-ing.	III.
2400	Wells, Thomas J.....	Constructing steamboats and propelling spirally.	VII.
2158	Wells, Thomas J.....	Dovetails and tenons, cutting.....	XIV.
2152	Wells, Thomas J.....	Horse power.....	XIII.
1943	Welsh, Samuel, and Thos. Lin-acre.	Fire escape, &c.....	XXII.
2011	Wemmer, Nelson J.....	Saws, apparatus for filing.....	II.
	Wenman, Uzziah. (See F. Ransom.)		
2157	Wheeler, Alonzo and Wm. C..	Horse power, endless chain.....	XIII.
2097	Wheeler, Wm M.....	Pump.....	XI.
2064	Whipple, Squire.....	Bridge, truss, iron.....	IX.
2346	White, Lloyd.....	Shingles, cutting.....	XIV.

*Alphabetical list of expired patents—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
2412	White, Thomas .....	Silk, finishing, machinery for.....	III.
2108	Whitehead, Jesse.....	Spinning, counter twist speeder for cotton roping.	III.
	Whitehead, Jesse.....	Speeder for cotton roping, counter twist ..	Addit'nl imp't.
2085	Whiteley, William H.....	Furnaces, hot air, and fire grates for heating apartments.	V.
1931	Whitford, John A.....	Car, railroad, &c.....	X.
1946	Whitford, John A.....	Corn sheller.....	I.
2242	Whitham, William.....	Steam engine.....	VI.
2163	Whitlock, George.....	Cultivator, revolving.....	I.
2037	Whittlesey, Isaac N.....	Steam engine, rotary.....	VI.
2241	Wibert, James S. and William ..	Hats of leather, manufacturing.....	XVI.
2338	Wightman, Joseph M.....	Pump, air.....	XI.
1929	Wilder, John.....	Valves of steam engines, operating .....	VI.
	Wilkins, Levi. (See Daniel B. Newhall.)		
2043	Wilkes, Samuel.....	Hinges, casting, on to their axis.....	II.
2224	Willemín, Eli.....	Balance, steelyards.....	XII.
2140	Williams, Edward T., and Latham T. Tew.	Lamps, burning lard, &c.....	V.
2363	Williams, Erastus, and Daniel L. Huntingdon.	Loom temples, opening and closing the jaw.	III.
1952	Willis, Charles.....	Corn sheller.....	I.
2123	Wilson, George W.....	Lock, door, and latches.....	II.
2192	Wilson, Increase.....	Mill cylinder for granulating corn, powder, bark, &c.	XIII.
2271	Wilson, Joseph B., and Alfred B. Crossman.	Brick and tile press.....	XV.
2402	Winans, Norman T., and Theodore and Thaddeus Hyatt.	Composition of matter for manufacture of friction matches.	IV.
2403	Winans, Norman T., and Theodore and Thaddeus Hyatt.	Composition of matter for manufacture of friction matches.	IV.
1985	Windship, Charles M.....	Lacteal or artificial breast.....	XX.
	Wistar, assignee of S. Costill. (See Collins.)		
2169	Wolpers, Charles O.....	Fermentation, vinous, process of conducting.	IV.
2214	Wood, Loftis.....	Stoves, cooking, or cabooses.....	V.
	Woodruff, Enos. (See Elisha D. Payne.)		
2257	Woodward, Moses S.....	Lamps, burning tallow.....	V.
2189	Worman, Andrew D.....	Flour, manufacturing, mixing middlings with the chops.	XIII.
2093	Wright, Mercy.....	Clay, moulding and pressing, to be applied to construction of fences.	XV.
2382	Wyeth, Nathaniel J.....	Car, railroad, discharging blocks of ice therefrom on to platforms.	X.
2381	Wyeth, Nathaniel J.....	Car, railroad machinery for elevating and depositing ice in.	X.
2380	Wyeth, Nathaniel J.....	Raising blocks of ice, machinery for.....	XII.
2196	Yale, Linias.....	Saw mill dogs.....	XIV.
2139	Young, James H., and Adrien Delcambre.	Type setting, machine for.....	XVIII.
2107	Zimmerman, William.....	Wind mill.....	XI.

ALPHABETICAL LIST OF PERSONS WHOSE PATENTS FOR DESIGNS HAVE  
EXPIRED DURING THE YEAR 1855.

No.	Patentees.	Designs.
178	Abendroth, William.....	Stoves, cooking.
192	Allen, F. W.....	Stoves.
206	Baker, Isaac F., assignor to Cornelius & Co.....	Furniture, ornaments.
175	Burgess, John, assignor to Gilbert Geer.....	Stoves.
189	Conklin, James H.....	Stoves.
196	Conklin, James H., assignor to Whitney and Montanya.....	Stoves.
163	Cresson, Wm. P., S. H. Sailor, J. Beesley, and D. Stuart Sailor; Beesley and Stuart assignors to Cresson.....	Stoves.
171	Cresson, Wm. P., D. Stuart, and J. Beesley; Stuart and Beesley assignors to Cresson.....	Stoves.
182	Davy, John T.....	Stoves, cooking.
197	Fairbanks, Thaddeus.....	Balances, pedestal for.
172	Garbeille, Philip.....	Bust of General Z. Taylor.
201	Gibbs, S. W., assignor to William Jackson.....	Stoves, cooking.
184	Gibney, Michael.....	Spoons and forks.
190	Green, Jeremiah D.....	Stoves.
173	Hickock, William.....	Stoves.
166	Lamb, J. G., and Charles Zoiner.....	Stoves, coal, and air-tight.
167	Lawson, Peter.....	Carpets.
168	Lawson, Peter.....	Carpets.
203	Lawson, Peter, assignor to Lowell Manufacturing Company.....	Carpets.
169	Morrison, Alexander.....	Stoves.
177	Penniman, E. P., assignor to W. H. Cheney.....	Stoves.
165	Potts, Jesse C.....	Stoves, cooking.
195	Pratt, Miles.....	Stoves.
191	Ransom, Samuel H.....	Stoves.
207	Rathbone, John F.....	Stoves.
202	Rathbun, George W.....	Stoves.
198	Richmond, Apollos, assignor to A. C. Barstow & Company.....	Stoves.
200	Ring, G. W., & J. Crandall, assignor to A. Cox & Company.....	Stoves.
180	Ripley, Ezra, assignor to A. Cox & Co.....	Stove plates.
181	Ripley, Ezra, assignor to A. Cox & Co.....	Stove plates.
193	Ripley, Ezra, assignor to Johnson & Cox.....	Stoves.
194	Ripley, Ezra, assignor to Johnson & Cox.....	Stove plates.
188	Sanderson, W. L., assignor to Anthony Dany & Co.....	Stoves.
185	Savery, William, J. H. Conklin, H. V. Losea, G. P. Bowens, and J. Pratt; Conklin & Losea, assignors to Savery, Bowens, and Pratt.....	Stoves.
205	Savery, William, and J. H. Conklin; Conklin, assignor to Savery.....	Stove plates.
204	Savery, William, and J. H. Conklin; Conklin, assignor to Savery.....	Stoves.
164	Smith, Elihu.....	Stoves.
170	Van Ness, P., and A. Wood.....	Forks, knives, and spoons.
208	Vose, Samuel D.....	Stoves, parlor.
176	Wager, James.....	Stoves.
179	Warnick, Charles W.....	Furnaces, portable.
183	Warnick, Charles W.....	Stoves.
199	Warnick, Charles W.....	Stoves.
174	Wood, George W.....	Stoves, plates for cooking.
186	Wood, Robert, and William Hamilton; Hamilton, assignor to Wood.....	Tables, pier or center.
187	Wood, Robert, and William Hamilton; Hamilton, assignor to Wood.....	Brackets, ornamental.

## CLASSIFIED LIST OF PATENTS THAT HAVE EXPIRED DURING THE YEAR 1955.

## CLASS I.—AGRICULTURE, including instruments and operations.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Beehives.....	Constant Webb.....	Wallingford, Conn.....	May 4, 1841; antedated Mar. 12, 1841.
Beehives.....	James Le Patourel.....	Chandlerville, Ohio.....	June 11, 1841.
Beehives.....	John M. Weeks.....	Salisbury, Vt.....	July 1, 1841.
Beehives.....	Hiram A. Pitsa.....	Winthrop, Maine.....	Sept. 25, 1841.
Churn.....	Thomas Pierce.....	Hartwick, N. Y.....	Nov. 10, 1841.
Churn, double dasher.....	Enos Mitchell.....	Pittsion, Maine.....	May 22, 1841.
Corn-sheller.....	Charles Willis.....	Chelsea, Mass.....	Jan. 27, 1841.
Corn-sheller.....	John A. Whitford.....	Saratoga Springs, N. Y.....	Jan. 23, 1841.
Corn-sheller.....	Joseph H. Derby.....	Leominster, Mass.....	Nov. 10, 1841.
Corn-sheller.....	Nicholas Gold-borough.....	Easton, Md.....	Feb. 12, 1841.
Corn-sheller.....	Pierson Reading.....	Batavia, Ohio.....	Sept. 25, 1841.
Cultivator, revolving.....	George Whitlock.....	Crown Point, N. Y.....	July 10, 1841.
Hulling and cleaning clover-seed.....	William C. Grimes.....	York, Penn.....	Mar. 3, 1841.
Hullin: rice and other grain.....	Webster Herrick.....	Northampton, Mass.....	June 26, 1841.
Mowing, cutting, and gathering flax and hemp, &c.....	Richard M. Cooch.....	Lambertville, N. J.....	July 16, 1841.
Mowing, harvesting grain.....	Alfred Churchill.....	Geneva, Ill.....	Mar. 16, 1841.
Mowing, harvesting machines for cutting, threshing, and winnowing grain.....	Damon A. Church.....	Friendship, N. Y.....	May 4, 1841.
Mowing, scythes, fastening the thole upon the snath.....	Selah W. Fox and Aretas Ferry.....	Barnardstown, Mass.....	Aug. 4, 1841.
Mowing, scythe, securing, upon the snath, and fastening the nib to the same.....	Silas Lampson.....	Shelburn Falls, Mass.....	July 1, 1841.
Plough, altering the set of the same.....	M. & S. J. Mims.....	Starkville, Miss.....	Dec. 23, 1841.
Plough, attaching the mould-board and sheath, &c., by means of rivets.....	Benjamin F. Jewett.....	Springfield, Ill.....	Feb. 12, 1841.
Plough, cast-iron.....	Reuben McMillen.....	Middlebury, Ohio.....	Dec. 14, 1841.
Plough, combined with a cultivator and { planter for ploughing, &c., at one operation. }	Wm. H. Rider, assignee of { Justus Kider.....	Belleville, Ill..... } Woodburn, Ill..... }	Mar. 12, 1841.

Plough, construction of.....	D. Prouty.....	Boston, Mass.....	June 10, 1841.
Plough, wrought iron.....	John Meane.....	Dorchester, Mass.....	Sept. 3 <sup>d</sup> , 1841.
Seeding, planting corn and other seeds.....	Joseph and Henry F. Cromwell.....	Cynthiana, Ky.....	April 10, 1841.
Seeding, plan- ing cotton-seed.....	Erza L. Miller.....	Brooklyn, N. Y.....	July 30, 1841.
Seedling, planting machines, &c.....	R. S. Thomas.....	Bennettsville, S. C.....	Oct. 11, 1841.
Seeding, seed drill or corn planter.....	Joseph Jones.....	Newton, N. J.....	Jan. 20, 1841.
Seeding, seed-planters.....	Calvin Olds.....	Marlborough, Vt.....	Mar. 12, 1841.
Seeding, tilling and planting at same opera- tion, called the cylindrical tiller and planter {	Moses and Samuel Pennock.....	East Marlborough, Penn.....	April 10, 1841.
Snut-machine.....	John F. Schermerhorn.....	Carroll Co., Ind.....	July 6, 1841.
Snut-machine.....	Rufus Porter.....	New York, N. Y.....	Dec. 14, 1841.
Snut-machine.....	Chas. D. Childs.....	Whitehall, N. Y.....	July 10, 1841.
Snut-machine.....	David Baldwin.....	Fredonia, N. Y.....	May 11, 1841.
Snut-machine.....	Henry A. Buck.....	Lancaster, Pa.....	April 24, 1841.
Snut-machine.....	Jacob Demuth and B. Bowman.....	Lampeter, Pa.....	Oct. 3, 1841.
Snut-machine.....	Levi Beck.....	Mt. Holly, N. J.....	July 16, 1841.
Snut-machine.....	James Coppuck.....	Tiffin, Ohio.....	April 19, 1841.
Snut-machine.....	Lewis Greene.....	New Bridge, Vt.....	Aug. 11, 1841.
Snut-machine.....	Thomas R. Bally.....	Shoreham, Vt.....	Dec. 10, 1841.
Snut-machine.....	Extra Rich.....	Rochester, N. Y.....	July 23, 1841.
Snut-machine.....	William B. Palmer.....	West Hempfield, Pa.....	Sept. 26, 1841.
Snut-machine, cleaning grain.....	Jonas Nolt.....	Philadelphia, Pa.....	April 24, 1841.
Snut-machine, cleaning grain, &c.....	John D. Beers.....	Bonsboru', Md.....	May 16, 1841.
Snut-machine, cleaning grain, &c.....	Samuel Bentz.....	Salisbury, Pa.....	Dec. 30, 1841.
Snut-machine, cleaning and separating garlic, &c., from grain.....	Joseph Heggel.....	Lyons, N. Y.....	May 4, 1841.
Snut-machine, cleaning and winnowing grain.....	Zalman Rice.....	Athens, Tenn.....	
Straw-cutters.....	John B. King.....	Le Roy, N. Y.....	
Threshing, grain, machines.....	Ashley Townsend.....	Georgetown, Pa.....	
Winnowing grain, fanning mills.....	David Philips.....	Franklin Mills, Pa.....	
	Asa Jackson.....		

## CLASS II.—METALLURGY, and manufacture of metals, and instruments therefor.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Door-fasteners, mortise latch .....	Leonard Foster.....	Boston, Mass.....	Aug. 28, 1841.
Door fastening on the inside, instrument for.....	Benjamin H. Green .....	Princeton, N. J.....	June 11, 1841.
Door-spring.....	Samuel Sawyer.....	Boston, Mass.....	Jan. 21, 1841.
Ferrules of canes, &c., constructing bottom end of.....	Jonathan Ball.....	Buffalo, N. Y.....	Oct. 11, 1841.
Files, cutting.....	Levi Anderson.....	Kensington, Philadelphia, Penn.....	Nov. 16, 1841.
Forges and furnaces, water-backs for.....	William McEwen.....	Norristown, Penn.....	Nov. 10, 1841.
Forges, blacksmiths', bellows-box attached.....	Chas. Foster.....	Rochester N. Y.....	May 11, 1841.
Furnaces, blast.....	Stephen Chubbuck and J. Briggs.....	Wareham, Mass.....	Jan. 9, 1841.
Furnaces, combination of, for manufactu- ring wrought iron directly from the ore.	Claude S. Quilliard.....	Rondout, N. Y.....	Dec. 23, 1841.
Gold, separating, from its ores, &c., appara- tus for.....	Thos. Seay.....	Columbia county, Ga.....	May 4, antedated Mar. 12, 1841.
Hearth, blacksmiths' or forge.....	Joseph Lawbach.....	Middletown, Penn.....	Nov. 10, 1841.
Hinges, butt, and casting of iron, brass, &c.....	William H. Carr, assignee of Thos. Shep- herd.....	Philadelphia, Penn.....	Oct. 9, 1841.
Hinges, casting, on to their axis.....	Samuel Wilkes.....	Darleston, Great Britain.....	April 10, 1841; antedated Jan. 21, 1840.
Iron ores, art of smelting, improvements in, and in certain furnaces applicable thereto.	Chas. Sanderson.....	Sheffield, England.....	Feb. 9, 1841.
Key-hole of door and other locks, closing and opening.....	David Evans.....	Philadelphia, Penn.....	July 10, 1841.
Knobs, glass, for locks, curtain pins, &c., { attaching necks, shanks, screws, &c., to. {	John G. Hotchkiss.....	New Haven, Conn.....	Nov. 16, 1841.
Latch, door.....	John A. Davenport and Jno. W. Quincy .....	New York, N. Y.....	Nov. 25, 1841.
Latch, door, and other locks.....	James M. Hoggan.....	New Haven, Conn.....	Nov. 3, 1841.
Latch of door-locks.....	E. Robinson & William Hall.....	Boston, Mass.....	May 6, 1841.
Lock, door, combination, improvement on patent, July 11, 1836.....	Jno. P. Sherwood.....	Sandy Hill, N. Y.....	Sept. 30, 1841.
Lock, door, combined snail wheel.....	Solomon Andrews.....	Perth Amboy, N. J.....	Feb. 12, 1841.
Lock, door, and latches.....	Geo. W. Willson.....	Nashua, N. H.....	June 11, 1841.
Lock, door, permutation.....	J. B. Gray.....	Fredericksburg, Va.....	Sept. 18, 1841.

Metal, sheet, cutting.....	Andrew Tracy.....	Poughkeepsie, N. Y.....	July 17, 1841.
Moulds for casting butt hinges.....	Thos. Shepherd and Thos. Loring.....	Philadelphia, Pa.....	Mar. 30, 1841.
Pin-making machine.....	John J. Howe.....	Derby, New Haven county, Conn.....	Mar. 30, 1841.
Pins, sticking, into paper, machine for.....	Samuel Slocum.....	Poughkeepsie, N. Y.....	Sept. 30, 1841.
Pipes and tubes from lead, &c.....	Benjamin Tatham and.....	Hitchen, England.....	Mar. 29, 1841;
Pipes or tubes of lead, tin, &c., machinery for making.....	Henry B. Tatham, assignees of.....	Philadelphia, Pa.....	Aug. 31, 1837.
Saws, apparatus for filing.....	John and Chas. Hanson.....	Huddersfield, England.....	
Screws, metallic.....	Geo. N. Tatham and Benjamin Tatham, jr.....	Philadelphia, Pa.....	Oct. 11, 1841.
Screws, wood, cutting.....	Nilson J. Wemmer.....	Philadelphia, Pa.....	Mar. 18, 1841.
Screw-wrench.....	John Luther.....	Warren, R. I.....	June 26, 1841.
Screw-wrench.....	Farwell H. Hamilton.....	Schenectady, N. Y.....	July 8, 1841.
Seythes, turning and bending heel of.....	Loring Coes.....	Springfield, Mass.....	April 16, 1841.
Spikes, heading.....	James Brett.....	Newburg, N. Y.....	July 10, 1841.
Spikes and nails, forming.....	Abel Simons and A. G. Page.....	Fitchburg, Mass.....	Dec. 10, 1841.
Steel, mode of hardening.....	Robert S. Harris.....	Wilmington, Del.....	Jan. 25, 1841.
Tin and other metals, cutting.....	William Ballard.....	New York, N. Y.....	July 17, 1841.
Tuyere, blacksmith's, &c.....	Perry Davis.....	Fall River, Mass.....	Aug. 4, 1841.
Tuyere, blacksmith's.....	Wm. Bulkley and Otis M. Inman.....	Berlin, Conn.....	Nov. 3, 1841.
Vices, making jaws of.....	Elias Kaighn.....	Kaighn's Point, N. J.....	April 2, 1841.
Window-blind fasteners.....	Riverius C. Stiles and Joseph L. Graves.....	East Bloomfield, N. Y.....	Dec. 14, 1841.
Window fastenings.....	William Sim.....	Schenectady, N. Y.....	Oct. 11, 1841.
Window-shutter and blind-fastener.....	Sylvanus Fausner.....	Southbury, Conn.....	April 10, 1841;
Window-shutter fastenings.....	Enoch Robinson and William Hall.....	Boston, Mass.....	Dec. 10, 1840.
	James P. McKean.....	Washington, D. C.....	Sept. 11, 1841.
	Thos. C. Cary.....	Poughkeepsie, N. Y.....	April 24, 1841.
			Dec. 30, 1841.

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CLASS III.—MANUFACTURES OF FIBROUS AND TEXTILE SUBSTANCES, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Braid, pressing after it has been trimmed.....	Henry H. Robbins.....	Middleborough, Mass.....	April 10, 1841.
Braid, straw trimming.....	Henry H. Robbins.....	Middleborough, Mass.....	Feb. 18, 1841.
Carding machine, cotton or wool.....	Ebenezer and Alanson Crane.....	Lowell, Mass.....	Jan. 30, 1841.
Carding machine, cotton or wool, &c.....	Joseph Monroe.....	Palmer, Mass.....	Oct. 11, 1841.
Carding machine, woolen, condenser for.....	Levi L. Gowdy.....	Montgomery, N. Y.....	Oct. 11, 1841.
Cloth, folding and measuring.....	Joel Spalding.....	Morristown, Vt.....	Aug. 28, 1841.
Fabrics, water-proofing.....	George J. Newbery.....	Citizen of the United States, residing in London, Eng.....	Mar. 3, 1841; antedated May 12, 1840.
Fabrics, water-proofing.....	Thomas B. Rogers.....	New York, N. Y.....	Nov. 3, 1841.
Felt cloths and hat-bodies, shrinking.....	Henry A. Wells.....	New York, N. Y.....	Sept. 11, 1841.
Felt cloths, hardening.....	Henry A. Wells.....	New York, N. Y.....	Sept. 18, 1841.
Felt cloth, &c., fulling, milling, or planking.....	Henry A. Wells.....	New York, N. Y.....	Sept. 18, 1841.
Flannels, &c., wetting.....	Joseph W. Hale.....	Haverhill, Mass.....	April 2, 1841.
Fulling-mill.....	Sidney E. Coleman.....	West Haven, Vt.....	June 11, 1841.
Gin, cotton.....	Lewis G. Sturdevant.....	Delaware, Ohio.....	July 23, 1841.
Gin, cotton, grates of saw.....	Albert Washburn.....	Bridgewater, Mass.....	June 16, 1841.
Gin, cotton, railroad.....	David Philips.....	Georgetown, Pa.....	May 23, 1841.
Gin, cotton, saw.....	C. A. McPetridge.....	Natchez, Miss.....	April 24, 1841.
Hair-seating, figured damask.....	Samuel Ross.....	Camden, N. J.....	Sept. 18, 1841.
Loom, power, stopping when welt or filling fails.....	O. M. Stillman.....	Stonington, Conn.....	Nov. 10, 1841.
Loom-templates, opening and closing the jaw.....	E. Williams and D. L. Huntingdon.....	Norwich, Conn.....	Nov. 16, 1841.
Loom-templates, self-acting rotary.....	William Craig and John Cochrane.....	England.....	Nov. 25, 1841.
Loom, weavers' harness, wire-heddles for.....	A. Howe and S. S. Grannis.....	Morrisville, N. Y.....	Sept. 30, 1841.
Loom, weavers' harness, wire-heddles for.....	A. Howe and S. S. Grannis.....	Morrisville, N. Y.....	Oct. 11, 1841.
Loom, weaving figured cloths, Jacquard machinery for.....	Alexander Calderhead.....	Philadelphia, Pa.....	Feb. 3, 1841.
Paper, cutting and trimming books.....	Fred. J. Austin.....	New York, N. Y.....	June 16, 1841; antedated Dec. 16, 1840.
Silk-finishing, machinery for.....	Thomas White.....	Mount Pleasant, Ohio.....	Dec. 30, 1841.
Silk reel and light machinery, driving with the foot.....	Aaron Clark.....	Greenwich, Conn.....	Jan. 20, 1841.

Silk-worms, cocoons for.....	J. B. Tillinghast.....	Huron, Ohio.....	Nov. 10, 1841.
Silk-worms, mode of feeding, and apparatus for.....	Edmund Morris.....	Burlington, N. J.....	June 16, 1841.
Spinning, self-acting, mules, bobbins, jennies, &c.....	Richard Roberts.....	Manchester, England.....	Oct. 11, 1841; July 1, 1830.
Spinning wool, domestic spinner for.....	John Nelson.....	Jefferson, Ohio.....	Jan. 27, 1841.
Spinning, ring-spinner.....	David Hunter.....	Laurel Factory, Md.....	July 23, 1841.
Spinning, cotton roping.....	Charles Danforth.....	Paterson, N. J.....	Feb. 18, 1841.
Spinning, speeder for cotton-roping counter-twist.....	Jesse Whitehead.....	Manchester, Va.....	May 29, 1841.
Spinning and twisting machinery, improvements applicable to.....	Charles Danforth.....	Paterson, N. J.....	May 4, 1841.
Wool, &c., combing and preparing.....	Francis A. Calvert.....	Lowell, Mass.....	Oct. 9, 1841.
Wool and cotton, cleaning from burrs, &c.....	William W. Calvert and Alonso Crane.....	Chelmsford, Mass.....	July 16, 1841.
Wool and cotton ginning, burring, or cleaning.....	Francis A. Calvert.....	Lowell, Mass.....	Nov. 25, 1841.

CLASS IV.—CHEMICAL PROCESSES, MANUFACTURES, AND COMPOUNDS, including medicine, dyeing, color-making, distilling, soap and candle making, mortars, cements, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Candles, moulding.....	James Gamble and Joseph S. Hill.....	Cincinnati, Ohio.....	Dec. 30, 1841.
Cacoutchouc, manufacturing balls of.....	Chas. B. Rogers and Edward Arnold, assignees of Edwin M. Chaffed.....	Charlestown, Mass.....	Jan. 21, 1841.
Cement, hardening manufactures of, and rendering them impervious to moisture.	Samuel Goodwin.....	New York, N. Y.....	April 16, 1841.
Composition of matter for manufacture of friction matches.	Norman T. Winans and Theodore and Thaddeus Hyatt.....	New York, N. Y.....	Dec. 23, 1841.
Composition of matter for manufacture of friction matches.	Norman T. Winans and Theodore and Thaddeus Hyatt.....	New York, N. Y.....	Dec. 23, 1841.
Compounds for coating metallic surfaces to prevent oxydation.	Arthur Wall.....	Shadwell, England.....	June 22, 1841.
Distilling, improvement in art of.....	Samuel Oliver.....	Northampton, Penn.....	Aug. 4, 1841.
Distilling apparatus for separating alcohol from whiskey.	Augustus V. H. Webb.....	New York, N. Y.....	Aug. 28, 1841.

## Classified list of patents issued—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Dyeing black, iron liquor used as mordant for.	Jno. D. Prince.....	Lowell, Mass.....	April 24, 1844.
Fermentation, vinous, process of conducting.	Chas. O. Wolpers.....	Cincinnati, Ohio.....	July 16, 1841.
Ink, indelible writing.....	Thos. J. Spear.....	New Orleans, La.....	July 16, 1841.
Medicine for treatment of syphilis, &c.....	Silas T. Thurman.....	Lincoln, Ky.....	July 23, 1841.
Paint, &c., vessels for preserving.....	John Rand.....	Citizen of the United States residing in England.....	Sept. 11, 1841.
Potash, leaching ashes in manufacture of.....	Joseph H. Ward.....	Randolph, Ohio.....	July 16, 1841.
Salting animal matters.....	Chas. Payne.....	South Lambeth, England.....	Sept. 11, 1841.
Starch, manufacture of.....	Orlando Jones.....	City Road, England.....	Mar. 12, 1841; antedated
Sulphate of alumine, process of manufacturing {	Randolph and Gustava Bonniger, assignees of Max I. Funcke.....	Baltimore, Md.....	April 30, 1840; antedated
		Eichelskamp, Prussia.....	Nov. 16, 1839.

## CLASS V.—CALORIFICS, comprising lamps, fire-places, stoves, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &amp;c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boiler or steamer, construction of.....	Salmon C. Riley.....	New York, N. Y.....	Oct. 11, 1841.
Choooses, adapted to distill salt water.....	Michael Roher.....	Nantes, France.....	Aug. 28, 1841.
Chimney apparatus, to prevent smoking, &c.....	Joseph Hurd, jr.....	Stoneham, Mass.....	April 24, 1841.
Cooking-ranges.....	Nathan P. Kingsley.....	Boston, Mass.....	Oct. 11, 1841.
Cooking-ranges.....	Abiram Spaulding.....	New York, N. Y.....	Nov. 12, 1841.
Fire-places in chimney stacks in buildings.....	Henry R. Sawyer.....	New York, N. Y.....	Mar. 26, 1841.
Flues, chimney, valves or dampers for.....	Norman Smith.....	Hartford, Conn.....	Jan. 25, 1841.
Flues of elevated ovens, combined with cooking stoves.	Rensselaer D. Granger.....	Albany, N. Y.....	Oct. 11, 1841.

Furnaces for heating air and warming apartments.	John A. Page	Boston, Mass.	Sept. 25, 1841.
Furnaces, hot-air, and fire-grates for heating apartments.	Wm. H. Whitely	Charlestown, Mass.	May 11, 1841.
Grates of lime-kilns, &c.	Wm. B. Hill	Bellevue, Mich.	July 30, 1841.
Grates of stoves, constructing and arranging.	Gardner Chilson	Boston, Mass.	Sept. 11, 1841.
Gridiron, constructing.	Isaac Damon	Northampton, Mass.	Jan. 30, 1841.
Heating water, steaming vegetables, &c.	James S. Marsh and Asa Munger	Auburn, N. Y.	April 2, 1841.
Kettles, potash, mode of setting.	Dani. B. Turner	Florence, Ohio	Sept. 18, 1841.
Lamp argand, constructing.	Benj. Hemmenway	Roxbury, Mass.	Jan. 20, 1841.
Lamp argand, constructing.	John S. Tough	Baltimore, Md.	May 11, 1841.
Lamps burning camphene, &c.	Stephen J. Gold	Cornwall, Conn.	July 16, 1841.
Lamps burning lard, &c.	Edwd T. Williams and L. T. Tew	Newport, R. I.	June 26, 1841.
Lamps burning lard, tallow, &c.	Geo. Carr	Buffalo, N. Y.	Sept. 4, 1841.
Lamps burning lard, tallow, &c.	Norman S. Cate and James H. Putnam	Charlestown, Mass.	Nov. 16, 1841.
Lamps burning tallow	Moses S. Woodward	Malden, Mass.	Sept. 18, 1841.
Lamps burning volatile ingredients	Isaiah Jennings	Marshallton, Pa.	Sept. 11, 1841.
Lamps, construction of	Christian and Chas. Richman	New York, N. Y.	June 17, 1841.
Lamps, improvement in	Benj. F. Greenough	Philadelphia, Pa.	April 10, 1841.
Lamps, gas, improvement in	Robt. Cornelius	Boston, Mass.	Mar. 18, 1841.
Ovens, elevated, combined with cooking and other stoves.	Saml. B. Spaulding	Philadelphia, Pa.	Aug. 23, 1841.
Ovens, elevated, combined with cooking-stoves.	Eli C. Robinson	Brandon, Vt.	Dec. 30, 1841.
Screens for sifting coal, grain, &c.	Elisha D. Payne and Enos Woodruff	Troy, N. Y.	April 19, 1841.
Stoves, air-tight.	Thos. M. Jones	Newark, N. J.	Aug. 11, 1841.
Stoves, air-tight, or Arnot.	Joseph E. Fisk	Boston, Mass. (residing in England)	Nov. 3, 1841.
Stoves, constructing.	Clark H. Robinson	Salem, Mass.	Feb. 13, 1841.
Stoves, cooking	Hiram Blanchard	Uniontown, Pa.	April 27, 1841.
Stoves, cooking	James Root	Aquackanok, N. J.	Sept. 11, 1841.
Stoves, cooking	John B. Bissell	Cincinnati, Ohio	April 16, 1841.
Stoves, cooking	M. C. Sadler	Oakville, N. Y.	April 10, 1841.
Stoves, cooking	Nelson W. Fisk, assignee of Almond D. Fisk.	Brockport, N. Y.	Nov. 10, 1841.
Stoves, cooking	Saml. L. Chase	New York, N. Y.	Aug. 11, 1841.
Stoves, cooking	William A. Shepherd	Woodstock, Vt.	Aug. 11, 1841.
Stoves, cooking and heating	Alexander F. Bean	Waterville, Me.	July 8, 1841.
Stoves, cooking, or caboses.	Loftis Wood	Woodstock, Vt.	Aug. 11, 1841.

*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Stoves, cooking, railway .....	R. P. Butrick .....	Lockport, N. Y. ....	Sept. 18, 1841.
Stoves or bakers, for cooking purposes .....	Mathew Stewart .....	Philadelphia, Pa. ....	July 23, 1841.
Stoves, or furnaces, &c., fire chambers of .....	Mathew Stewart, Jr. ....	Philadelphia, Pa. ....	Nov. 16, 1841.
Stoves, parlor .....	John and Evans Backus .....	New York, N. Y. ....	Feb. 18, 1841.
Stoves, parlor .....	Joseph Fehour, Jr. ....	Philadelphia, Pa. ....	Oct. 11, 1841.
Stoves, parlor and dumb, combined .....	Alonzo L. Blanchard .....	Albany, N. Y. ....	Nov. 12, 1841.
Stoves, parlor, or open grates, for burning anthracite and other coal .....	Otis Jenks .....	Albany, N. Y. ....	Nov. 16, 1841; antedated
Stove-pipes, ornamental slides or plates for covering the flues of .....	Perry Davis .....	Fall River, Mass. ....	Nov. 2, 1841.

*[CLASS VI.—STEAM AND GAS ENGINES, including boilers and furnaces therefor, and parts thereof.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boiler, steam, and evaporator. (Improvement on Marvin & Seely's patent of August 28, 1840.) .....	Oran W. Seely .....	New York, N. Y. ....	July 1, 1841.
Boilers, steam, ascertaining pressure of steam .....	Geo. Bradley .....	Paterson, N. J. ....	April 16, 1841.
Boilers, steam, caldron and furnace combined .....	Lansing E. Hopkins .....	New York, N. Y. ....	Oct. 11, 1841.
Boilers, steam, supplying with water, apparatus for .....	Ethan Campbell .....	New York, N. Y. ....	Aug. 28, 1841.
Boilers, steam, supplying with water, self-acting apparatus .....	John Hampson .....	New Orleans, La. ....	Sept. 4, 1841.
Condensers of steam-engines, and apparatus for supplying the boilers with water .....	Josephus Echols .....	Columbus, Ga. ....	Aug. 11, 1841.
Piston-rods of steam-engines, &c .....	Jno. R. St. John .....	Cleveland, Ohio .....	April 27, 1841.

Spark-arrester.	Rich'd French.	Philadelphia, Pa.	June 16, 1841.
Spark-arrester.	Leonard Phleger, assignee of.	Philadelphia, Pa.	June 26, 1841.
Spark-arrester.	Wm. W. Hubbell.	Moyamensing, Pa.	June 26, 1841.
Spark-arrester.	Leonard Phleger, assignee of.	Philadelphia, Pa.	June 26, 1841.
Spark-arrester.	Wm. W. Hubbell.	Moyamensing, Pa.	June 26, 1841.
Spark-arrester.	Leonard Phleger, assignee of.	Philadelphia, Pa.	June 26, 1841.
Steam-engine.	William W. Hubbell.	Moyamensing, Pa.	Sept. 4, 1841.
Steam-engine, &c.	William Whitham.	Huddersfield, England.	Nov. 25, 1841.
Steam-engine, locomotive, distributing sand, &c., to produce adhesion of driving-wheels.	Louis Lisé.	Kingdom of France, residing in Pittsburgh, Pa.	Oct. 9, 1841.
Steam-engine, locomotive, for railroads.	Elihu Tolles.	New York, N. Y.	Feb. 10, 1841.
Steam-engine, locomotive, increasing adhesion of driving-wheel.	Henry Waterman.	Hudson, N. Y.	Aug. 28, 1841.
Steam-engine, locomotive, propelling by stationary power.	Jordan L. Mott.	New York, N. Y.	Dec. 23, 1841.
Steam-engine, low-pressure, arranging, to adapt its parts for vessels in ocean service.	John A. Ezler.	Philadelphia, Pa.	June 11, 1841.
Steam-engine, regulating pressure of steam.	Charles W. Copeland.	New York, N. Y.	Mar. 29, 1841.
Steam-engine, repeating expansive engine.	Francis R. Torbit.	Paterson, N. J.	Nov. 3, 1841.
Steam-engine, rotary.	James Frost.	Brooklyn, N. Y.	June 11, 1841.
Steam-engine, rotary.	Hermion Smith.	Sunbury, Ohio.	April 2, 1841.
Steam-engine, rotary.	Isaac N. Whittlesey.	Vincennes, Ind.	Oct. 11, 1841.
Steam-engine, rotary.	J. A. Stewart.	Cross Plains, Tenn.	Mar. 29, 1841;
Steam-engine, rotary.	James J. Cordes and.	Citizen of the United States.	July 18, 1840.
Steam-engine, rotary.	Edward Lock.	Newport, England.	Mar. 26, 1841.
Steam-engine, rotary.	Jesse Tuttle.	Boston, Mass.	Dec. 14, 1841.
Steam-generating combined cooking oven and boiler.	Reuben McMillen.	Middlebury, Ohio.	Aug. 21, 1841.
Valve of steam-engines, cut-off.	Horatio Allen.	New York, N. Y.	Oct. 11, 1841.
Valves of steam-engines, thrutle.	William Garlin.	Providence, R. I.	Jan. 9, 1841.
Valves of steam-engines, operating.	John Wilder.	New York, N. Y.	Jan. 25, 1841.
Valves of steam-engines, working when the steam is cut off, &c.	Robert L. and Francis B. Stevens.	New York, N. Y.	

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CLASS VII.—NAVIGATION AND MARITIME IMPLEMENTS, comprising all vessels for conveyance on water, their construction, rigging and propulsion, diving-dresses, life-preservers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bales of cotton, floating them in form of rafts.	George R. Griffith.	Mobile, Ala.	Sept. 25, 1841.
Barge and army boat, portable safety.	Solomon C. Batchelor.	Cincinnati, Ohio.	Jan. 20, 1841.
Boats, life and other.	Joseph Francis.	New York, N. Y.	Mar. 26, 1841.
Boats, submarine gun.	Daniel Fitzgerald.	New York, N. Y.	Oct. 11, 1841.
Constructing berth of vessels.	Harmon King.	New York, N. Y.	Sept. 4, 1841.
Constructing boats, vessels, &c.	Joseph Francis.	New York, N. Y.	Oct. 11, 1841.
Constructing steamboats, and propelling spirally.	Thomas J. Wells.	New York, N. Y.	Dec. 23, 1841.
Constructing steam-vessels, and propelling.	William W. Hunter.	United States navy.	Mar. 12, 1841; antedated
Constructing steam-vessels to prevent sinking.	Benjamin Harris.	Norfolk, Va.	Nov. 2, 1840.
Floating batteries.	Richard McDonald.	Harrisburg, Pa.	Nov. 10, 1841.
Harpoon.	Prosper Martin.	Philadelphia, Pa.	Aug. 11, 1841.
Life-preserver, or buoyant dress.	William Carley.	New Bedford, Mass.	July 29, 1841.
Propeller.	Napoleon E. Guérin.	New York, N. Y.	Nov. 16, 1841.
Propeller.	Daniel Fitzgerald.	New York, N. Y.	Oct. 9, 1841.
Propeller.	Elisha F. Aldrich.	New York, N. Y.	July 30, 1841; antedated
Propeller.	Francis P. Smith.	London, England.	Jan. 30, 1841.
Propeller.	Meredith Mallory.	Urbana, N. Y.	Nov. 12, 1841; antedated
Propeller, paddle.	Samuel Swett, jr.	Chelsea, Mass.	May 31, 1836.
Propeller, paddle, vibrating.	Peter Lear.	Boston, Mass.	Aug. 4, 1841.
Propeller, paddle, and water-wheel, bracing arms of.	William F. Julian.	Hartsville, Ind.	May 11, 1841.
Propeller, paddle-wheels, constructing and arranging.	William W. Van Loan.	Catskill, N. Y.	Dec. 30, 1841.
Propeller, paddles of paddle-wheels, arranging.	P. G. Gardner.	New York, N. Y.	June 7, 1841.
Propeller, screw.	Ebenezer Beard.	New Sharon, Me.	Mar. 29, 1841.
			May 4, 1841.
			April 10, 1841.

Propeller, wheel for propelling steam-ships, and wind or water-wheel for mills.	Jno. Hobday and Wm. J. Cocke.....	Portsmouth, Va.....	Mar. 22, 1841.
Steering brace for boats .....	Howard Nichols.....	New Bedford, Mass.....	Sept. 18, 1841.
Steering steamboats, apparatus for.....	Russell Everts.....	Madison, Conn.....	Jan. 6, 1841.

CLASS VIII.—MATHEMATICAL, PHILOSOPHICAL, AND OPTICAL INSTRUMENTS, including clocks, chronometers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Alarm, fire .....	Josiah Brown, assignee of.....	Brentwood, N. H.....	Jan. 30, 1841; antedated
Barometer .....	Theophilus Goodwin.....	Exeter, N. H.....	July 30, 1840.
Clocks.....	Wm. R. Hopkins.....	Geneva, N. Y.....	Jan. 27, 1841.
	Aaron D. Crane.....	Newark, N. J.....	Feb. 10, 1841; antedated
Coin, apparatus for counting.....	Philos B. Tyler, executor of Rufus Tyler, deceased.	New Orleans, La.....	Dec. 22, 1840.
Extension tables, slides of.....	Charles F. Hobe.....	New York, N. Y.....	Oct. 11, 1841.
Lightning conductors, connecting rods of.....	Justin E. Strong.....	New York, N. Y.....	June 22, 1841.
Lightning conductors, attaching the receiving and discharging points of.....	William A. Oroutt.....	Boston, Mass.....	April 19, 1841.
Signals, railway alarm .....	Samuel Nicolson.....	Boston, Mass.....	Oct. 9, 1841.
Spectacles, construction of .....	Christopher H. Smith .....	Suffolk, Mass.....	June 26, 1841.
Spectacles, forming joint on end-piece of frame.	Thomas Eltonhead .....	Niagara, N. Y.....	Nov. 12, 1841.
		Baltimore, Md.....	April 2, 1841.



CLASS IX.—CIVIL ENGINEERING AND ARCHITECTURE, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Blinds, Venetian, retaining slate of, in desired position.	John Hampson	New Orleans, La.	Aug. 21, 1841.
Bridge.	Earl Trumbull.	Little Falls, N. Y.	July 10, 1841.
Bridge, building.	Albert Cottrell.	Newport, R. I.	Nov. 10, 1841.
Bridge, spiral-braced cylinder.	Isaiah Rogers.	New York, N. Y.	Nov. 10, 1841.
Bridge, truss, frames of.	John Prince and James T. Phillips.	Golden, Md.	Feb. 23, 1841.
Bridge, truss, iron.	Squire Whipple.	Utica, N. Y.	April 24, 1841.
Canal, lock-gate.	Robert English.	Legro, Ind.	July 1, 1841.
Canal, lock-gate sluice.	George Heath.	Little Falls, N. Y.	Dec. 4, 1841.
Canals and mill-dams, waste-gates, opening and closing.	Robert Robinson.	Greece, N. Y.	Dec. 14, 1841.
Dock, floating dry.	John Thomas.	New York, N. Y.	June 26, 1841.
Dock, floating dry.	Daniel Dodge and Phineas Burgess.	New York, N. Y.	Oct. 9, 1841.
Excavating ditches.	George W. Cherry.	Washington, D. C.	Mar. 26, 1841.
Excavating earth.	David C. Lockwood.	New Windsor, N. Y.	Mar. 31, 1841.
Paving, blocks of wood, &c.	James H. Paterson.	New York, N. Y.	Jan. 27, 1841.
Paving, blocks of wood, &c.	Stephen Carey.	New Orleans, La.	Feb. 3, 1841; antedated Jan. 29, 1839.
Paving, blocks of wood, prismatic.	John Abbott.	Wilton, N. H.	Sept. 25, 1841.
Pile-driving machine.	Robert N. Benson.	New Orleans, La.	Sept. 18, 1841.
Railroad scrapers, &c.	Henry M. Naglee and Thomas Raney.	Philadelphia, Pa.	Dec. 30, 1841.
Raising sunken vessels, machinery for.	John Gustia.	Yarmouth, Mass.	Dec. 10, 1841.
Removing bars, &c., from harbors, rivers, &c.	James R. Putnam.	New Orleans, La.	May 6, 1841.
Stump extracting.	Balden B. Mason.	Randolph, N. Y.	Feb. 20, 1841.
Stump extracting.	Mathews Joslyn.	Napoli, N. Y.	
Wells, artesian, boring, &c.	Luke F. Cavanaugh.	New Field, N. Y.	May 15, 1841.
	William Morris.	Kanawha county, Va.	Sept. 4, 1841.

CLASS X.—LAND CONVEYANCES, comprising carriages, cars, and other vehicles used on roads, and parts thereof.

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Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Axle and hub for carriage-wheels.....	Henry F. Phillips.....	Skaneateles, N. Y. ....	Sept. 18, 1841.
Axle of railroad car, strengthening, &c.....	Peter and William C. Allison.....	Philadelphia, Pa.....	Nov. 3, 1841.
Bumper and draught springs on railroad cars.....	Fowler M. Ray.....	Catekill, N. Y.....	July 29, 1841.
Car-bodies, railroad.....	George S. Hacker.....	Charleston, S. C.....	Jan. 21, 1841.
Car, railroad, &c.....	Jno. A. Whitford.....	Saratoga Springs, N. Y.....	Jan. 20, 1841.
Car, railroad, discharging blocks of ice therefrom on to platform.....	Nathaniel J. Wyeth.....	Cambridge, Mass.....	Dec. 10, 1841.
Car, railroad, machinery for elevating and depositing ice in.....	Nathaniel J. Wyeth.....	Cambridge, Mass.....	Dec. 10, 1841.
Car, railroad, turning curves.....	Perry G. Gardner, assignee of Isaac Bullock.....	New York, N. Y.....	Oct. 11, 1841.
Carriages, railroad.....	Albert Bridges and Chas. Davenport.....	Cambridgeport, Mass.....	May 4, 1841.
Springs, carriage.....	R. B. Brown.....	Essex, Vt.....	Dec. 14, 1841.
Springs and levers to sustain the body of wagons.....	Elihu Ring.....	Trumansburg, N. Y.....	July 29, 1841.
Springs, elliptical.....	David A. Edwards.....	Boston, Mass.....	Nov. 16, 1841.
Springs, elliptical, forming the sockets of.....	William T. Richards.....	Poultney, Vt.....	Nov. 16, 1841.
Springs, pneumatic, piston of, &c.....	Alexander Connison.....	Bellville, N. J.....	Dec. 23, 1841; antedated
Springs, railroad cars, &c.....	William Duff.....	Baltimore, Md.....	Dec. 20, 1841.
Springs, railroad car, &c., in which compressed atmospheric air, &c., is employed.....	Levi Bissell.....	Newark, N. J.....	Jan. 9, 1841.
Wheels for rail and other roads.....	Henry Dircks.....	Liverpool, Eng.....	Oct. 11, 1841.
			June 26, 1841.

CLASS XI.—HYDRAULICS AND PNEUMATICS, including water-wheels, windmills, and other implements operated on by air or water, or employed in the raising and delivery of fluids.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Cocks and molasses gates, &c.	Levi Lincoln.....	Hartford, Conn.....	Nov. 10, 1841.
Cocks for hydrants.....	Ebenezer Hubball.....	Baltimore, Md.....	May 11, 1841.
Cocks for hydrants.....	Ebenezer Hubball, assignee of Joseph Martin.	Baltimore, Md.....	Feb. 10, 1841.
Cocks for hydraulic and pneumatic purposes.	John L. Chapman.....	Baltimore, Md.....	Oct. 11, 1841.
Cocks or faucets, &c.	Henry Rogers.....	Auburn, N. Y.....	Oct. 9, 1841.
Cocks, stop	Horatio Allen.....	New York, N. Y.....	Nov. 12, 1841.
Engine, fire.	Asa Barrett.....	Baltimore, Md.....	Feb. 18, 1841.
Engine, fire.....	Joseph B. Babcock.....	Marietta, Ohio.....	July 1, 1841.
Hydrostatic or hydraulic press for pressing cotton.	John Houpt.....	Forkland, Ala.....	Aug. 21, 1841.
Measuring liquids, measures for.	John S. Tough.....	Baltimore, Md.....	July 23, 1841.
Pump.....	Chapman Warner.....	Lexington, Ky.....	Nov. 10, 1841.
Pump.....	Jesse Reed.....	Marefield, Mass.....	April 16, 1841.
Pump.....	Joel Farman.....	Stillwater, N. Y.....	Nov. 16, 1841.
Pump.....	Sidney S. Hogle.....	Lansburg, N. Y.....	May 29, 1841.
Pump.....	William M. Wheeler.....	Liberty, Mo.....	May 15, 1841.
Pump, air.....	Joseph M. Wightman.....	Boston, Mass.....	Nov. 10, 1841.
Pump, cattle.....	Shively Staddon.....	Greenwood, Pa.....	April 2, 1841.
Pump, double-acting, for raising and forcing water.	Joel Farman.....	Stillwater, N. Y.....	Nov. 10, 1841.
Pump, rotary.....	Samuel A. Lee.....	Boston, Mass.....	Sept. 4, 1841.
Pump, suction and force, double-acting.	Joel Farman.....	Stillwater, N. Y.....	Dec. 14, 1841.
Pump, valve, &c.	C. D. Van Allen.....	Petersburg, Va.....	July 8, 1841.
Pump, valves and pistons of.	John Clark.....	Portsmouth, Va.....	Oct. 11, 1841.
Raising water, endless chain and bucket.	John Dutton.....	Aston Township, Delaware co., Pa.	Oct. 9, 1841.
Raising water, hydraulic wheels for.	Pierre D. Henry.....	New Orleans, La.....	Jan. 9, 1841.
Siphons, &c.	George Johnson.....	New York, N. Y.....	Dec. 23, 1841.
Water, applying to fire-engines, &c.	Franklin Ransom, and U. Newman.....	New York, N. Y.....	Feb. 13, 1841.
Water-wheels.....	Clark Lewis.....	Syracuse, N. Y.....	July 16, 1841.
Water-wheels.	Jesse Taylor.....	Aurelius, N. Y.....	Sept. 11, 1841.

Water-wheels.....	John G. Garretson	Muhlenberg, Ohio	Oct. 11, 1841.
Water-wheels.....	John L. Smith	Salina, N. Y.	Dec. 10, 1841.
Water-wheels.....	Nelson Johnson	Triangle, N. Y.	June 22, 1841.
Water-wheels, bucket openings for admitting water on.	Ira Stanbrough	Arcadia, N. Y.	Nov. 25, 1841.
Water-wheels, current.....	Noadiah W. Hubbard	Randolph, Ohio	April 2, 1841.
Water-wheels, reacting.....	Nathaniel F. Hodges	Cornling, N. Y.	July 16, 1841.
Windmill.....	Perry Davis	Fall River, Mass.	Aug. 11, 1841.
Windmill.....	Wm. Zimmerman	Stephenson, Ill.	May 29, 1841.
Windmill, horizontal.....	John M. Van Osdel	Chicago, Ill.	Mar. 12, 1841.

CLASS XII.—LEVER, SCREW, AND OTHER MECHANICAL POWER, as applied to pressing, weighing, raising, and moving weights.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Balance, platform.....	Thomas Y. Jennings	Geneva, Ohio	Nov. 10, 1841.
Balance, portable.....	Albert Dole	Bangor, Me.	Dec. 23, 1841.
Balance, steelyards.....	Eli Willemis	Leesburg, Ohio	Aug. 21, 1841.
Balance, weighing apparatus.....	Christopher E. Dampier	Ware, England	Feb. 12, 1841; Jan. 14, 1840.
Balance, weighing apparatus.....	Martin Robbins	Hollidaysburg, Pa.	Jan. 23, 1841.
Buildings, &c., removing.....	Lewis Pallman	Portland, N. Y.	Aug. 21, 1841.
Holding, machinery for.....	John B. Holmes	Boston, Mass.	June 7, 1841.
Packing tobacco, staves or billets of cast-iron for.	Thos. Samson	Richmond, Va.	May 11, 1841.
Press, cheese.....	Damon A. Church	Friendship, N. Y.	May 4, 1841.
Press, cheese.....	Job Arnold	Harmony, N. Y.	April 2, 1841.
Press, cotton.....	Wm. C. Van Hoesen	Catekill, N. Y.	April 2, 1841.
Press, cotton, hay, &c.....	Chas. W. Hawkes	Brunswick, Me.	May 29, 1841.
Press, cotton, hay, &c.....	Lemuel Bolls, Jedediah Prescott, and William A. Bickford.	Memphis, Tenn.	Feb. 13, 1841.
Press, screw, and application to the pressure of Elaine from tallow.	Richard Jones	Circleville, Ohio	Oct. 9, 1841.
Press, seal.....	A. Ralston Chase	Cincinnati, Ohio	April 19, 1841.
Press, tobacco.....	Albert Sneed	Richmond, Va.	Sept. 11, 1841.

*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Press, tobacco.....	Elliot Richardson .....	West River, Md .....	July 16, 1841.
Press, tobacco.....	Joseph Bucey .....	West River, Md .....	Dec. 23, 1841.
Press, tobacco.....	Thomas G. Hardesty .....	Tracy's Landing, Md.....●	May 23, 1841.
Raising blocks of ice, machinery for.....	Nathaniel J. Wyeth .....	Cambridge, Mass .....	Dec. 10, 1841.

## CLASS XIII.—GRINDING MILLS AND MILL-GEARING, including grain-mills, mechanical movements, and horse-powers.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Flour, manufacturing, mixing middlings with the chops.....	Andrew D. Worman.....	Fredericktown, Md.....	July 23, 1841.
Grist-mill.....	Ezekiel G. Ward.....●	New York, N. Y.....	Feb. 20, 1841.
Grist-mill.....	Josiah Platt.....	Weston, Conn.....	Oct. 9, 1841.
Grist-mill, bush for.....	George M. Copeland.....	Genoa, Ohio.....	Oct. 11, 1841.
Grist-mill, conical.....	Samuel Sheldon.....	Cincinnati, Ohio.....	Sept. 11, 1841.
Gudgeon, applying friction rollers to.....	Martin C. Forrist .....	Foxborough, Mass.....	Nov. 16, 1841.
Gudgeon, or pivot and step of, mill spindles, &c.....	Jacob Staub.....	Georgetown, D. C.....	May 4, 1841.
Horse-power.....	Edmund Warren.....	New York, N. Y.....	Jan. 5, 1841.
Horse-power.....	J. Francis Moore.....	Falmouth, Va.....	May 4, 1841.
Horse-power.....	Moses Davenport.....	Pittsburgh, Pa.....	Sept. 4, 1841.
Horse-power.....	Samuel H. Little.....	Gettysburg, Pa.....	June 11, 1841.
Horse-power.....	Thomas J. Wells.....	New York, N. Y.....	July 1, 1841.
Horse-power, endless chain.....	Alonso and Wm. C. Wheeler.....	Chatham, N. Y.....	July 8, 1841.
Horse-power, endless floor.....	Jeremiah M. Reed .....	Middlefield, N. Y.....	Jan. 30, 1841; antedated Dec. 9, 1840.
Horse-power, portable master wheel of.....	John A. Taplin.....	Hammond, N. Y.....	Dec. 30, 1841.

Mill-cylinder, for granulating corn, powder, bark, &c.	Increase Wilson.....	New London, Conn.....	July 23, 1841.
Mill, universal, for grinding, hulling, &c.	James Bogardus .....	New York, N. Y. ....	July 29, 1841.
Mill-stones, dressing, with ventilations for cooling the flour.	Pendleton Cheek .....	Flat Rock, Ga. ....	Original date of this patent Aug. 21, 1841; dated anew July 26, 1845; antedated June 5, 1845.
Motion of fly-wheel or slide, to multiply.....	Chas. Johnson.....	Amity, Ill. ....	Oct. 11, 1841.
Power, graduating the velocity of moving bodies.	Edwin W. Jackson.....	Albany, N. Y. ....	Jan. 5, 1841.
Power, maintaining to drive machinery.....	Stephen P. W. Douglass .....	Williamson, N. Y. ....	May 22, 1841.

CLASS XIV.—LUMBER, including machines and tools for preparing and manufacturing, such as sawing, planing, mortising, shingle and stave, carpenters' and coopers' implements.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Dovetail and tenons, cutting .....	Thomas J. Wells .....	New York, N. Y. ....	July 8, 1841.
Dovetail, cutting square-joint .....	William Perrin.....	Lowell, Mass.....	Mar. 24, 1841.
Lathe, turning handles, poles, &c.....	Collins & Wistar, assignees of Stacy Costill.....	Philadelphia, Pa.....	June 7, 1841.
Mortising-machine.....	Sidney S. Hogle.....	Rockville, N. Y. ....	Nov. 16, 1841.
Planing boards and timber.....	James King.....	Morristown, N. J. ....	Mar. 18, 1841.
Ploughs, manufacture of.....	Hervey Law .....	Wilmington, N. C. ....	Sept. 30, 1841.
	Draper Ruggles, Joel Nourse, and John C. Mason, assignees of Elbridge G. Matthews.	Worcester, Mass.....	Feb. 23, 1841.
Sawing-machine, cross-cut.....	Henry Burger.....	Danville, Ind.....	Mar. 18, 1841.
Saw-mill .....	David Phillips.....	Georgetown, Pa.....	Mar. 12, 1841.
Saw-mill.....	James B. Lowry.....	North East, Pa.....	June 11, 1841.
	Philander Eggleston.....	Mayville, N. Y. ....	
Saw-mill .....	William Bryant .....	Nashville, Tenn.....	June 11, 1841.
Saw-mill dogs.....	Damon A. Church.....	Friendship, N. Y. ....	April 16, 1841.
Saw-mill dogs.....	Linus Yale.....	Newport, N. Y. ....	July 29, 1841.
Saw-mill, head block of, &c.....	James King.....	Sapling Grove, Va.....	Feb. 26, 1841.
Saw-mill, portable.....	James C. Mayo .....	Columbia, Va.....	July 29, 1841.

*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Saw-mill, portable circular.....	George Page.....	Baltimore, Md.....	July 16, 1841.
Saw-mill, re-sawing boards, &c.....	Pearson Crosby.....	Fredonia, N. Y.....	Nov. 3, 1841.
Saw-mill, self-setting.....	Frederick Goodell and Thomas W. Harvey.....	New York, N. Y.....	Nov. 3, 1841.
Saw-mill, sustaining logs in.....	Jeremiah Rohrer.....	Rohrer'sville, Md.....	May 29, 1841.
Shingles, cutting.....	Lloyd White.....	Jeffersonville, Ind.....	Nov. 10, 1841.
Shingles, cutting.....	Truman Walcott.....	Stow, Mass.....	Jan. 20, 1841; antedated Sept. 5, 1840.
Shingles, riving and dressing.....	William S. George.....	Baltimore, Md.....	May 29, 1841.
Splitting timber, and making splints, laths, &c.....	Benjamin Besch.....	Clarksville, Ohio.....	Nov. 10, 1841.
Splints, cutting, for manufacturing brooms, &c.....	Lyman Gleason.....	Le Roy, N. Y.....	Oct. 9, 1841.
Staves, cutting.....	Cephas Manning.....	Acton, Mass.....	April 10, 1841.
Staves, sawing bilged, for barrels, &c.....	Robert Stewart.....	Michigan City, Ind.....	Nov. 25, 1841.

**CLASS XV.—STONE AND CLAY MANUFACTURES, including machines for pottery, glass-making, brick-making, dressing and preparing stone, cements, and other building materials.**

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Brick-machine.....	Walden Beach and Ephraim Lukens.....	Baltimore, Md.....	May 22, 1841.
Brick-machine.....	Charles G. Brown.....	Caldwells, N. Y.....	Oct. 11, 1841.
Brick-press.....	Thomas Conklin.....	Woodville, Miss.....	Jan. 23, 1841.
Brick-press.....	Thomas W. Smith.....	Alexandria, D. C.....	Jan. 30, 1841.
Brick-press, and tile.....	Joseph B. Wilson.....	Walden, Mass.....	Sept. 30, 1841.
Clay, moulding and pressing, to be applied to the construction of fences, &c.....	Alfred B. Crossman.....	Huntingdon, N. Y.....	May 15, 1841.
	Mercy Wright.....	Talltown, Pa.....	

Stone, cutting and dressing.....	JOHN A. DAVENPORT and JOHN W. QUINCY... Thomas J. Cornell.....	NEW YORK, N. Y..... Worcester, Mass.....	Nov. 3, 1841.
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CLASS XVI.—LEATHER, including tanning and dressing, manufacture of boots, shoes, saddlery, harness, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boots and shoes, manufacturing, &c.....	Ansel Thayer.....	Braintree, Mass.....	April 24, 1841.
Boots, treeling.....	Elias Hall, Jr.....	Spencer, Mass.....	May 29, 1841.
Crimping leather, clamps for.....	Josiah M. Read.....	Boston, Mass.....	Mar. 16, 1841.
Carriers' beam, constructing face of.....	Ichabod Lindsey.....	Charlestown, Mass.....	Jan. 27, 1841.
Harness, blinds of horse-bridles.....	John G. Tibbets.....	New York, N. Y.....	Oct. 9, 1841.
Harness, horse collars, cutting leather for.....	Thomas Parkinson.....	Sparta, N. Y.....	July 17, 1841.
Harness, horse-collars, stretching, &c.....	James R. Osborn.....	Redding, N. J.....	Jan. 30, 1841.
Hats of leather, manufacturing.....	James S. and Wm. Wilbert.....	Eden, N. Y.....	Sept. 4, 1841.
Hides, raw, and leather, cutting into strips for manufacture of ropes, &c.....	Philip B. Holmes and Wm. Pedrick.....	Charlestown, Mass.....	Jan. 9, 1841.
Saddles, spring.....	Thomas Mardock.....	Liberty, Ind.....	Aug. 28, 1841.
Shoemakers' paring-knives.....	Isaac S. Pendergast.....	Barnstead, N. H.....	July 16, 1841.
Splitting leather.....	Alpha Richardson.....	Boston, Mass.....	Feb. 9, 1841.
Tanning hides, &c., process of.....	Simoon Guilford.....	Lebanon, Pa.....	Nov. 10, 1841.
Tanning, removing wool, &c., from skins of animals.....	Francis and Hanson Robinson.....	Wilmington, Del.....	May 15, 1841.
Trunks, travelling.....	John Fitzgibbon.....	Philadelphia, Penn.....	Oct. 11, 1841.



CLASS XVII.—HOUSEHOLD FURNITURE, machines and implements for domestic purposes, including washing machines, bread and cracker machines, feather-dressing, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bedstead, cutting screws on the rails of.....	Joel Thompson.....	Cynthiana, Ky.....	July 29, 1841.
Bedstead, cutting tenons and boring holes in the rails of.....	Thomas Cole.....	Greensburg, Ind.....	Nov. 12, 1841.
Bedstead, fastening.....	Herman C. Ernst.....	Vandalia, Ill.....	Feb. 23, 1841.
Bedstead, securing and fastening rails of.....	John P. Allen.....	Manchester, Mass.....	Nov. 3, 1841.
Bedsteads, sofa.....	James M. Meshutt.....	New York, N. Y.....	July 23, 1841.
Brushes, attaching the bristles to.....	Robert B. Lewis.....	Hallowell, Me.....	Feb. 23, 1841.
Chair, recumbent.....	Henry P. Kennedy.....	Philadelphia, Pa.....	May 22, 1841; antedated
Clothes'-horse, connecting the frames of.....	Harvey Luther.....	Providence, R. I.....	April 12, 1841.
Crackers, cutting.....	Charles P. Forbes.....	Providence, R. I.....	May 19, 1841.
Crackers, cutting.....	William Perkins.....	Baltimore, Md.....	July 17, 1841.
Crackers, cutting.....	William R. Nevins.....	Boston, Mass.....	April 2, 1841.
Crackers, making.....	Riley Darling.....	New York, N. Y.....	Nov. 10, 1841.
Cutting blubber.....	George and John J. Kilburn.....	East Greenwich, R. I.....	Sept. 30, 1841.
Feathers, drying, whipping, and cleaning.....	Nathaniel L. Manning.....	Fall River, Mass.....	Nov. 16, 1841; antedated
Refrigerator.....	Job S. Gold.....	Boston, Mass.....	Sept. 20, 1841.
Washing-machine.....	George Waterman.....	Philadelphia, Pa.....	April 16, 1841.
Washing-machine.....	Horatio N. Walter.....	Johnston, R. I.....	Mar. 12, 1841.
Washing-machine.....	Leonard Proctor.....	Norwich, Conn.....	May 11, 1841.
Washing-machine.....		New York, N. Y.....	June 22, 1841.
			Nov. 16, 1841.

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Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Block printing on woven fabrics of cotton, &c.	Robert Hampson.....	Manchester, Great Britain.....	June 7, 1841; antedated
Copy-books and method of binding the same.	William Davison.....	Baltimore, Md.....	June 9, 1840.
Fliers, or ready-binders for filing pamphlets, &c.	Isaac Dettler.....	Philadelphia, Pa.....	Oct. 9, 1841.
Inkstand.....	Frederick J. Austin.....	New York, N. Y.....	May 22, 1841.
Inkstand.....	George Burnham.....	Philadelphia, Pa.....	Feb. 20, 1841.
Inkstand.....	Isaac M. Moss, assignee of.....	Philadelphia, Pa.....	Dec. 30, 1841.
Inkstand, capillary wick, &c.....	John Farley.....	Washington, D. C.....	Jan. 30, 1841.
Pen, fountain, &c.....	William Davison.....	Baltimore, Md.....	Oct. 9, 1841.
Piano-forte.....	Daniel B. Newhall.....	Boston, Mass.....	Nov. 3, 1841.
Piano-forte.....	Lemuel Gilbert.....	Boston, Mass.....	July 10, 1841.
Piano-forte, action part of.....	Timothy Gilbert.....	Boston, Mass.....	Feb. 10, 1841.
Piano-forte, hammerheads used in.....	Timothy Gilbert, assignee of Edwin Forbes.....	Boston, Mass.....	Feb. 10, 1841.
Piano-forte, horizontal.....	Frederick C. Reichenbach.....	Philadelphia, Pa.....	May 19, 1841.
Piano-forte, keys in.....	Daniel B. Newhall and Levi Wilkins, assignees of John Dwight, part inventor with said D. B. Newhall.....	Boston, Mass.....	May 6, 1841.
Pollishing-plates used in taking likenesses, apparatus for.....	John Johnson.....	New York, N. Y.....	Dec. 14, 1841.
Type-setting, machines for.....	James H. Young and Adrien Delcambre.....	England.....	June 22, 1841.
		France.....	

CLASS XIX.—FIRE-ARMS AND IMPLEMENTS OF WAR, and parts thereof, including the manufacture of shot and gunpowder

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Cannon balls, &c., manufacturing from malleable iron, lead, &c.	Lewis Grandy and Thomas Osgood.....	Troy, N. Y.....	Feb. 3, 1841.
Fire-arms, manner of discharging.....	Joshua Shaw.....	Philadelphia, Pa.....	Jan. 30, 1841.
Fire-arms, portable.....	Charles Lewis Stanislas, Baron Heurteloup..	Subject of France.....	July 29, 1841; antedated Feb. 23, 1839.
Gunpowder, corning or graining.....	Leonard T. Swett.....	Canton, Conn.....	Nov. 16, 1841.
War-rockets, boring.....	Alvin C. Goell.....	Washington, D. C.....	Mar. 18, 1841.
War-rockets, press for filling.....	Alvin C. Goell.....	Washington, D. C.....	Feb. 18, 1841.

CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, including trusses, dental instruments, bathing apparatus, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Lacteal, or artificial breast.....	Chas. M. Winship.....	Roxbury, Mass.....	Feb. 18, 1841.
Lancet, spring.....	John M. Van Osdel.....	Chicago, Ill.....	April 24, 1841.
Legs, debility in the, apparatus for relief of.	Stephen P. W. Douglass.....	Palmira, N. Y.....	May 15, 1841.
Speculum ani.....	Joseph T. Pitney.....	Auburn, N. Y.....	July 23, 1841.
Tooth extractor.....	Moses J. Hill.....	Bloomfield, Ind.....	June 7, 1841.
Truss for prolapsus uteri.....	John A. Campbell.....	Lima, N. Y.....	April 10, 1841.
Truss, reducible hernia, mode of treating.....	Zophar Jane.....	Carrollton, Ill.....	April 2, 1841.

CLASS XXI.—WEARING APPAREL, articles for the toilet, &c., including instruments for manufacturing.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Buttons, attaching, to cloth.....	Henry S. Poole.....	Boston, Mass.....	Aug. 11, 1841.
Buttons, manufacture of.....	Thomas Prosser.....	Paterson, N. J.....	July 29, 1841; antedated
Corsets.....	Alanson Abbe.....	Worcester, Mass.....	Jan. 29, 1841.
Corsets.....	Elizabeth Adams.....	Boston, Mass.....	April 2, 1841.
Garments, pockets of.....	Daniel Harrington.....	Philadelphia, Pa.....	Jan. 21, 1841.
Garments, tailors' instruments and mode of measuring.....	Lewis Fienner.....	Philadelphia, Pa.....	Oct. 11, 1841.
Garments, tailors' measures for.....	Lyman B. and Ellery Miller.....	Walkill, N. Y.....	Nov. 10, 1841.
Garments, taking measure and draughting.....	Aaron A. Tentler.....	Philadelphia, Pa.....	May 29, 1841.
Suspender straps, attaching, to pantaloons.....	David B. Cook.....	New York, N. Y.....	Jan. 23, 1841.
			Sept. 4, 1841.

CLASS XXII.—MISCELLANEOUS

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Fire-escapes, &c.....	Samuel Welsh and Thos. Linacree.....	Albany, N. Y.....	Jan. 23, 1841.
Ice, forming.....	Thos. Briggs Smith.....	St. Louis, Mo.....	Jan. 23, 1841.
Knives, &c., handles for.....	Zina K. Murdock.....	Meriden, Conn.....	April 16, 1841.
Palm leaf, machine for splitting.....	Corey McFarland.....	Barre, Mass.....	Mar. 31, 1841.

## CLASSIFIED LIST OF PATENTS FOR DESIGNS THAT HAVE EXPIRED DURING THE YEAR 1855.

Designs.	Patentees.	Residence.	Date of patent.
Balances, pedestals for.....	Thaddeus Fairbanks.....	St. Johnsbury, Vt.....	Aug. 29, 1848.
Brackets, ornamental.....	R. Wood and W. Hamilton; assignor to Wood.....	Philadelphia, Pa.....	June 20, 1848.
Bust of General Z. Taylor.....	Philip Garbielle.....	New Orleans, La.....	Mar. 28, 1848.
Carpets.....	Peter Lawson.....	Lowell, Mass.....	Feb. 22, 1848.
Carpets.....	Peter Lawson.....	Lowell, Mass.....	Feb. 22, 1848.
Carpets.....	Peter Lawson, assignor to the Lowell Manufacturing Company.....	Lowell, Mass.....	Oct. 24, 1848.
Forks, knives, and spoons.....	P. Nan Ness and A. Wood.....	New York, N. Y.....	Mar. 21, 1848.
Furnaces, portable.....	Charles W. Warnick.....	Philadelphia, Pa.....	May 9, 1848.
Furniture ornaments.....	J. F. Baker, assignor to Cornelius & Co.....	Philadelphia, Pa.....	Dec. 5, 1848.
Spoons and forks.....	Michael Gibney.....	New York, N. Y.....	June 13, 1848.
Stoves.....	Wm. P. Cresson, S. H. Sailor, J. Beesley, and D. Stuart; Sailor, Beesley, and Stuart, assignors to Cresson.....	Philadelphia, Pa.....	Jan. 18, 1848.
Stoves.....	Wm. P. Cresson, D. Stuart, and J. Beesley; Stuart & Beesley, assignors to Cresson.....	Philadelphia, Pa.....	Mar. 28, 1848.
Stoves.....	Elisha Smith.....	Albany, N. Y.....	Jan. 18, 1848.
Stoves.....	Alexander Morrison.....	Troy, N. Y.....	Mar. 8, 1848.
Stoves.....	William Hickok.....	New York, N. Y.....	April 4, 1848.
Stoves.....	J. Burgess, assignor to G. Geer.....	Troy, N. Y.....	April 11, 1848.
Stoves.....	James Wager.....	Troy, N. Y.....	April 11, 1848.
Stoves.....	E. P. Pennington, assignor to W. H. Chesney.....	Rochester, N. Y.....	April 18, 1848.
Stoves.....	Charles W. Warnick.....	Philadelphia, Pa.....	May 30, 1848.
Stoves.....	William Savery.....	New York, N. Y.....	June 13, 1848.
Stoves.....	J. H. Conklin, H. V. Losea, G. P. Bowers, and J. Pratt; Conklin & Losea, assignors to Savery, Bowers, & Pratt.....	Boston, Mass.....	June 13, 1848.
Stoves.....	W. L. Sanderson, assignor to Anthony Dany & Co.....	Troy, N. Y.....	June 27, 1848.
Stoves.....	James H. Conklin.....	Peekskill, N. Y.....	June 27, 1848.
Stoves.....	Jeremiah D. Green.....	Troy, N. Y.....	July 18, 1848.

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Stoves.....	Samuel H. Moore.....	Albany, N. Y.....	Aug. 1, 1848.
Stoves.....	F. W. Allen.....	Waterford, N. Y.....	Aug. 10, 1848.
Stoves.....	E. Ripley, assignor to Johnson & Cox.....	Troy, N. Y.....	Aug. 10, 1848.
Stoves.....	Miles Pratt.....	Carver, Mass.....	Aug. 15, 1848.
Stoves.....	James H. Conklin, assignor to Whitney & Montanya.....	New York, N. Y.....	Aug. 22, 1848.
Stoves.....	Apollos Richmond, assignor to A. C. Barrett & Co.....	Providence, R. I.....	Aug. 30, 1848.
Stoves.....	Charles W. Warwick.....	Philadelphia, Pa.....	Aug. 30, 1848.
Stoves.....	G. W. Ring and J. Crandall, assignors to A. Cox & Co.....	Troy, N. Y.....	Sept. 19, 1848.
Stoves.....	George W. Rathburn.....	Le Roy, N. Y.....	Oct. 24, 1848.
Stoves.....	William Savery and J. H. Conklin; Conklin assignor to Savery.....	New York, N. Y.....	Nov. 21, 1848.
Stoves.....	John F. Rathbone.....	Albany, N. Y.....	Dec. 5, 1848.
Stoves, coal and air-tight.....	J. G. Lamb and Charles Zoinet.....	Cincinnati, Ohio.....	Feb. 15, 1848.
Stoves, cooking.....	J. C. Potts.....	Albany, N. Y.....	Jan. 25, 1848.
Stoves, cooking.....	William Abendroth.....	Portchester, N. Y.....	May 9, 1848.
Stoves, cooking.....	John T. Davy.....	Troy, N. Y.....	May 30, 1848.
Stoves, cooking.....	S. W. Gibbs, assignor to William Jackson.....	Albany, N. Y.....	Sept. 19, 1848.
Stoves, parlor.....	Samuel D. Vose.....	Syracuse, N. Y.....	Dec. 19, 1848; ante-dated June 19, 1848.
Stoves, plates for cooking.....	George W. Wood.....	Utica, N. Y.....	April 4, 1848.
Stove-plates.....	E. Ripley, assignor to A. Cox & Co.....	Troy, N. Y.....	May 16, 1848.
Stove-plates.....	E. Ripley, assignor to A. Cox & Co.....	Troy, N. Y.....	May 16, 1848.
Stove-plate.....	E. Ripley, assignor to Johnson & Cox.....	Troy, N. Y.....	Aug. 10, 1848.
Stove-plate.....	William Savery and J. H. Conklin; Conklin assignor to Savery.....	New York, N. Y.....	Nov. 19, 1848.
Tables, pier and centre.....	Robert Wood and W. Hamilton assignor to Wood.....	Philadelphia, Pa.....	June 20, 1848.

## ALPHABETICAL LIST OF PATENTEES FOR THE YEAR 1855.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13560	Abbott, Amos.....	Horometers.....	Sept. 12, 1855.....	VIII.
13775	Abbott, Hiram..... Abbott & Lawrence. (See Smith, Brown, and Read, assignors.)	Tire, &c., upsetting.....	Nov. 13, 1855.....	X.
12432	Abbott & Lawrence. (See Smith, Brown, and Holyer, assignors.) Ackerly, Henry S..... Ackerman, C. J. (See Halsted, Jonas S., and C. J. Ackerman.)	Piano-forte frames.....	Feb. 28, 1855.....	XVIII.
13695	Ackerman, Theodore, assignor to H. H. Homan, W. Muhle, and T. Ackerman.) Adams, D. P. (See Moore, Jonas, and D. P. Ad- ams.) Adams, J. W. (See Moore, J. O., and J. W. Ad- ams.)	Casting tea-pot spouts and handles.....	Oct. 16, 1855.....	II.
12303	Adams, J. J. W.....	Boring wells, implements for.....	Jan. 30, 1855.....	IX.
12773	Adams, John R.....	Fire-engine.....	May 1, 1855.....	V.
12849	Adams, John W.....	Spring, circular, metallic plate.....	May 15, 1855.....	X.
13074	Adams, Joseph.....	Stone-sawing machine.....	June 19, 1855.....	XV.
13516	Adams, Joseph Alexander.....	Electrotyping, machine for.....	Sept. 4, 1855.....	XVIII.
12614	Adams, Henry W.....	Oil, factitious.....	April 4, 1855.....	IV.
12304	Adams, William.....	Glue, clarifying.....	Jan. 30, 1855.....	IV.
13153	Adams, William.....	Paper, sand, cutting-machines.....	July 3, 1855.....	III.
12237	Addison, John S..... Ahlsrom & Loudon. (See Loudon, John, and Otto Ahlsrom.)	Gold-washer and amalgamator.....	Jan. 17, 1855.....	II.
12933	Aiken, J. B., assignor to J. B. & H. Aiken.....	Knitting-machines.....	May 22, 1855.....	III.
13561	Aiken, W. & J. B., assignors to Herrick Aiken and Jonas B. Aiken.	Knitting-machines.....	Sept. 12, 1855.....	III.
12939	Albrecht, Jos.. (See Bernard & Albrecht.)	Printing oilcloths, registering blocks for.....	June 5, 1855.....	XVIII.
12663	Albro, James..... Aldrich, Warren.....	Lathe.....	April 10, 1855.....	XIV.

13154	Alexander, George, administrator. (See Spafford, Sophia B. and C.)	Fire-arms.....	July 3, 1855.....	XIX.
12472	Allard, Daniel L. (See Bailey, Archibald, and D. L. Allard.)	Hemp, Sisal, machines for cleaning and stripping seed from broom-corn.....	March 7, 1855.....	III.
13075	Allen, Ethan.....	Valve, cone, two motion.....	June 19, 1855.....	XI.
12236	Allen, Horatio.....	Lourea, temples for.....	Jan. 17, 1855.....	III.
12372	Allen, John H.....	Clover-hullers.....	Feb. 13, 1855.....	I.
13473	Allen, James.....	Life-boats.....	March 7, 1855.....	VII.
13373	Allen, John.....	Meat and other substances, machine for chopping.....	Feb. 13, 1855.....	XVII.
13338	Allen, W. H.....	Bottle fastenings.....	July 24, 1855.....	XXII.
13340	Allender, John.....	Balance for detecting spurious coin.....	Nov. 27, 1855.....	XII.
12891	Ambler, George B.....	Saddle-trees, wooden.....	May 22, 1855.....	XIV.
	American White Zinc Company. (See Garduer, Smith, assignor.)			
12806	American Hosiery Company. (See Doolittle, John H., assignor.)	Leather and morocco, machine for polishing.....	May 1, 1855.....	XVI.
723	Ames, Nathan, assignor to Samuel Green.....	Fire-places, portable.....	Aug. 28, 1855.....	Design.
721	Ames, Winslow.....	Stoves and fire-places.....	Aug. 28, 1855.....	Design.
13399	Ames, Winslow.....	Veneers, embossed, application of.....	Dec. 11, 1855.....	XIV.
12152	Amies, Israel.....	Planters, seed.....	Jan. 5, 1855.....	I.
	Anderson, Alexander.....			
	Anderson & Fogleaong. (See Fogleaong, Wm. G., assignor.)			
12474	Anderson, J. J.....	Stoves, cook.....	Mar. 7, 1855.....	V.
13713	Anderson, Robert and John E.....	Hulling, rice, machines.....	Oct. 13, 1855.....	I.
12663	Andrews, John.....	Wells, artesian, drills for.....	April 10, 1855.....	IX.
728	Andrews, Jas., assignor to Andrews & Dixon.....	Grates, parlor.....	Sept. 12, 1855.....	Design.
12772	Apperly, William.....	Car, railroad, ticket, register for.....	May 1, 1855.....	X.
13295	Applebee, Cephas.....	Metal, sheet, machines for cutting.....	July 24, 1855.....	II.
12719	Appleton, Charles T.....	Bleaching apparatus.....	April 18, 1855.....	IV.
311	Appleton, Charles T.....	Bleaching apparatus.....	May 22, 1855.....	Belasue.
13613	Arneson, P. J. Peterson, and H. Rees.....	Hat-bodies, materials for.....	Oct. 2, 1855.....	III.
13614	Arneson, P. J. Peterson, and H. Rees.....	Hat bodies, machinery for manufacturing.....	Oct. 2, 1855.....	III.
13414	Arnold, Francis.....	Egg-holder.....	Aug. 14, 1855.....	XXII.
12615	Arnold, James P.....	Presses.....	April 4, 1855.....	XII.



*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12940	Arnold, Thomas, assignor to Urn & J. S. Arnold & Co.	Bedsteads, invalid.....	May 30, 1855.....	XVII.
12710	Arnold, William E.....	Sash-fasteners.....	April 18, 1855.....	II.
12500	Arnold, William E.....	Sash-fasteners.....	Mar. 14, 1855.....	II.
12896	Arthur, John and Evan.....	Boot and shoe uppers, soles, &c., machines for cutting, from sheets of India-rubber.	July 24, 1855.....	XVI.
13415	Arthur, John and Evan.....	Engines, &c., steam, governors for.....	Aug. 14, 1855.....	VI.
12153	Arthur, Robert.....	Cans, preserve, self-sealing.....	Jan. 5, 1855.....	IV.
12501	Abburner, Theophilus A.....	Bottle-stopper fastenings.....	Mar. 14, 1855.....	XXII.
13873	Ashley, Lewis C.....	Candle-mould apparatus.....	Dec. 25, 1855.....	IV.
12193	Ashley, Lewis C.....	Candle-mould machines.....	Jan. 12, 1855.....	IV.
12774	Ashton, Wm.....	Bullet mould.....	May 1, 1855.....	XIX.
	Asphalt Mining and Kerocene Gas Company. (See Gesner, Abraham, assignor.)			
12903	Aspiralli, John.....	Sugar, apparatus for draining.....	July 10, 1855.....	IV.
12756	Atkins, Jerome.....	Harvesters, grain, platform of.....	April 24, 1855.....	I.
13631	Atkins, Larkin T.....	Staves, gauging, measuring, &c., machine for.....	Oct. 9, 1855.....	XIV.
13344	Atwater, John H.....	Washing-machines.....	July 31, 1855.....	XVII.
13204	Atwood, Charles.....	Ventilating railroad cars.....	July 10, 1855.....	V.
12941	Avery, John.....	Looms, shuttle, motion of.....	May 30, 1855.....	III.
12117	Aylesworth, Neuman.....	Metals, machine for boring, planing, and slotting.....	Jan. 5, 1855.....	II.
12374	Aylesworth, Thomas D.....	Hop-frames.....	Feb. 13, 1855.....	I.
13076	Babbett, Avery.....	Forms, irregular, machine for cutting.....	June 19, 1855.....	XIV.
12306	Babbitt, B. F.....	Ventilator, car.....	Jan. 30, 1855.....	V.
13310	Bacon, Philip.....	Fuse, tape.....	May 8, 1855.....	XIX.
13379	Badger, D. D.....	Houses, iron.....	Aug. 7, 1855.....	IX.
12992	Bahl, Ernest.....	Ventilator, ship.....	June 5, 1855.....	V.
13297	Bailey, Archibald, and Daniel L. Allard Bailey, A. J. (See Bingham, Albert, assignor.) Bailey & Bingham. (See Bingham, A., assignor.) Bailey & Speed. (See Speed, J. J., jr., and J. A. Bailey.)	Whiffle-tree.....	July 24, 1855.....	X.

13417	Bailey, Fortune L.	Cars, apparatus for replacing.....	Aug. 14, 1855.	X.
13578	Bailey, Gilbert L., assignor to G. L. Bailey and M. Nutting.	Castings for furniture.....	Mar. 29, 1855.	XVII.
13381	Bailey, Leonard	Plane-scraper.....	Aug. 7, 1855.	XIV.
13811	Bailey, Timothy	Knitting-machines.....	Nov. 20, 1855.	III.
12409	Bailey, Yarnall	Burners, fluid.....	Feb. 20, 1855.	V.
12616	Baker, Richard	Lead, white, manufacture of by precipitation.....	April 4, 1855.	IV.
326	Baker, Wm., assignor to C. Parker	Hinges.....	Aug. 28, 1855.	Reissue.
13743	Bakewell, Thomas W.	Blast-furnaces, method of treating air for.....	Nov. 6, 1855.	XI
12118	Baldwin, David	Printing-presses and ruling-machines, apparatus for feeding paper to.....	Jan. 5, 1855.	XVIII.
12736	Baldwin, T. J.	Paper-ruling machine.....	April 18, 1855.	XVIII.
12433	Bale, John	Annunciators, hotel.....	Feb. 28, 1855.	XXII.
12464	Ball, Thomas C.	Jack-screw.....	Feb. 28, 1855.	XII.
13298	Ball, Wm.	Boilers, steam, feeding water to, by auxiliary engines.....	July 24, 1855.	VI.
12475	Ballard, Harmon W.	Springs on wagons, arrangement of the.....	March 7, 1855.	X.
12119	Ballard, William	Vessels, constructing.....	Jan. 5, 1855.	VII.
12476	Ballaut, William, and Frederick Wurth	Locks, door, guards for.....	Mar. 7, 1855.	II.
12580	Bauersfeld, Charles F.	Lumber-joining machines, clamp or mouth-piece for.....	Mar. 28, 1855.	XIV.
	Banker & Carpenter, assignees. (See Brown, C. W., assignor.)			
12850	Banks, George. (See Keelen, James, assignor.)	Sleighs.....	May 15, 1855.	X.
12844	Barber, D. S. A., and D. Thompson	Forms, irregular, machine for cutting.....	May 15, 1855.	XIV.
12934	Barber, J. S., assignor to Robert J. Marcher	Metre, water.....	May 22, 1855.	XI.
	Barden, John S., assignor to O. Snow and G. B. Farnum.			
12232	Barden, John S.	Metre, water.....	Jan. 17, 1855.	XI.
12579	Barker, Abel	Pump, rotary.....	Mar. 23, 1855.	XI.
12617	Barker, Abel	Pumps, air, method of lubricating pistons of.....	April 4, 1855.	XI.
12664	Barlow, Nelson	Saw-teeth.....	April 10, 1855.	XIV.
12345	Barlow, Nelson	Planing machines, method of feeding planks to.....	July 31, 1855.	XIV.
12230	Barlow, Thomas H.	Fire-arms.....	Jan. 17, 1855.	XIX.
12812	Barnes, Alexander	Mop heads.....	Nov. 20, 1855.	XVII.
12408	Barnes, Chas. R.	Mill-stone dress for hulling rice.....	Feb. 20, 1855.	XIII.
	Barnes, Horace, assignee. (See Halvorson, H., assignor.)			
13418	Barnes, O. C. and C. J.	Whiffletrees.....	Aug. 14, 1855.	X.
13419	Barnhart, A. J.	Planters, corn.....	Aug. 14, 1855.	I.

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12465	Barnhart, Andrew J.	Planters, seed.	Feb. 28, 1855.	I.
13346	Barnhart, Simon	Fan-blower.	July 31, 1855.	V.
13744	Barney, Geo. C.	Whiffletrees.	Nov. 6, 1855.	X.
13205	Barrett, Jona F.	Harvesters, method of raising and lowering the cutters of.	July 10, 1855.	I.
13347	Barrett, Oliver D.	Mop-wringer.	July 31, 1855.	XVII.
13206	Barrows, Thomas.	Processes for treating wool.	July 10, 1855.	IV.
13486	Barrows, Thomas.	Oil, wool, preparations of.	Aug. 28, 1855.	IV.
12851	Barry, Job R.	Ventilating and cooling apparatus.	May 15, 1855.	V.
	Barstow & Co., assignees. (See Richmond, Apollos, assignor.)			
12305	Barstow, E. R. (See Wardwell, B., et al.)	Furnace, hot-air.	Jan. 30, 1855.	V.
	Bartlett, Abel H.			
	Bartlett, L. J. (See Dimmoor & Bartlett.)			
	Bartlett, Stephen. (See Brown, John, and Stephen Bartlett.)			
13420	Basinaget, Francis	Compositions for treating rubber and gutta percha.	Aug. 14, 1855.	IV.
12154	Batchelor, S. B.	Carriages, journal boxes for.	Jan. 5, 1855.	X.
13518	Batty, Thomas.	Ships' topmasts, supporting.	Sept. 4, 1855.	VII.
13861	Batty, Thomas.	Ships' yards, suspending.	Dec. 4, 1855.	VII.
	Bausman, Isaac W. (See Williams, Isaac.)			
13900	Baxendale, James.	Cloth, folding and measuring, machinery for.	Dec. 11, 1855.	III.
12749	Bayley, O. W., assignor to the Manchester Locomotive Works.	Furnace for locomotives.	April 18, 1855.	V.
12341	Beach, A. E. (See Robertson, T. J. W., assignor.)	Snut-machines.	Feb. 6, 1855.	I.
13504	Bean, John, and Benjamin Wright.			
	Bean, John (See Wright & Bean.)			
	Beans, Robert.	Harvesters, changing from reapers to mowers, and vice versa, mechanism for.	Aug. 28, 1855.	I.
697	Beard, Ebenezer	Screw propeller, form of, for propelling vessels.	Mar. 26, 1855.	Extension.
	Beesley, Jacob, and Edward Delany, assignors to Cresson, Stewart, & Peterson.	Sieves, cooking.	Mar. 20, 1855.	Design.

130229	Beasley, William, assignor to J. and J. W. Brett, of Westminster, C. W. Tupper, of London, and Wm. Beasley, of Smithwick.	Jan. 12, 1855	II.
	Beaumont, Wm. D., assignee. (See Hooker, Thomas, assignor.)		
13056	Beaumont, Wm. D.	June 13, 1855	V.
12949	Beck, Jacob M. (See Lowe, Saml. W., assignor.)		
13390	Beckwith, Eliza P.	Jan. 17, 1855	XII.
13597	Bedford, Daniel	Sept. 25, 1855	XI.
13077	Boheens, H. J.	Sept. 25, 1855	II.
12953	Beche, Uriah	June 19, 1855	I.
	Beer, Sigismund, assignor to Lewis Feuchtwaenger and Sigismund Beer.	May 30, 1855	IV.
13592	Berestecker, F.	Sept. 25, 1855	XIX.
13696	Bell, John	Oct. 23, 1855	XIV.
13633	Bell, T., and H. Scholefield.	Oct. 9, 1855	IV.
	Bennett, A., & W. Covell. (See Turner, Joshua, assignor.)		
12407	Bennett, James H.	Feb. 20, 1855	I.
13560	Bennett, Wm., assignor to the Union India-rubber Lamp Company.	Nov. 27, 1855	V.
12937	Benton, R. P.		
12477	Benyard, E. C.	Jan. 23, 1855	XIV.
12375	Bredan, Hiram	Mar. 7, 1855	XVIII.
13632	Bernard, P. L., and Joseph Albrecht.	Feb. 13, 1855	VII.
12537	Berthon, Edward L.	Oct. 9, 1855	IV.
13740	Bertrand, Charles E.	Mar. 20, 1855	VII.
13537	Bidwell, Salmon	Oct. 30, 1855	IV.
13591	Bietel, C. G., and Henry J. Brunner	Sept. 4, 1855	V.
12581	Bigelow, Augustus E.	Sept. 25, 1855	XV.
12582	Bigelow, Augustus E.	Mar. 23, 1855	III.
13562	Bigelow, Erasmus B.	Mar. 23, 1855	III.
13936	Bigelow, E. B.	Dec. 4, 1855	III.
13813	Bigelow, G. W.	Dec. 18, 1855	III.
13373	Bigelow, Lucian N.	Nov. 20, 1855	XII.
638	Bigins, Henry, assignor to Michael Gibney	July 31, 1855	I.
13155	Billings, A. C., and B. H. Ruggles	April 4, 1855	Design.
13635	Bills, John A.	July 3, 1855	XIV.
	Bingham, A., assignor to Bingham & Bailey	Oct. 9, 1855	XVII.
13515		Aug. 28, 1855	XVIII.
	Bisbee, William, assignor to J. and J. W. Brett, of Westminster, C. W. Tupper, of London, and Wm. Beasley, of Smithwick.		
	Beaumont, Wm. D., assignee. (See Hooker, Thomas, assignor.)		
	Beaumont, Wm. D.	June 13, 1855	V.
	Beck, Jacob M. (See Lowe, Saml. W., assignor.)		
	Beckwith, Eliza P.	Jan. 17, 1855	XII.
	Bedford, Daniel	Sept. 25, 1855	XI.
	Boheens, H. J.	Sept. 25, 1855	II.
	Beche, Uriah	June 19, 1855	I.
	Beer, Sigismund, assignor to Lewis Feuchtwaenger and Sigismund Beer.	May 30, 1855	IV.
	Berestecker, F.	Sept. 25, 1855	XIX.
	Bell, John	Oct. 23, 1855	XIV.
	Bell, T., and H. Scholefield.	Oct. 9, 1855	IV.
	Bennett, A., & W. Covell. (See Turner, Joshua, assignor.)		
	Bennett, James H.	Feb. 20, 1855	I.
	Bennett, Wm., assignor to the Union India-rubber Lamp Company.	Nov. 27, 1855	V.
	Benton, R. P.		
	Benyard, E. C.	Jan. 23, 1855	XIV.
	Bredan, Hiram	Mar. 7, 1855	XVIII.
	Bernard, P. L., and Joseph Albrecht.	Feb. 13, 1855	VII.
	Berthon, Edward L.	Oct. 9, 1855	IV.
	Bertrand, Charles E.	Mar. 20, 1855	VII.
	Bidwell, Salmon	Oct. 30, 1855	IV.
	Bietel, C. G., and Henry J. Brunner	Sept. 4, 1855	V.
	Bigelow, Augustus E.	Sept. 25, 1855	XV.
	Bigelow, Augustus E.	Mar. 23, 1855	III.
	Bigelow, Erasmus B.	Mar. 23, 1855	III.
	Bigelow, E. B.	Dec. 4, 1855	III.
	Bigelow, G. W.	Dec. 18, 1855	III.
	Bigelow, Lucian N.	Nov. 20, 1855	XII.
	Bigins, Henry, assignor to Michael Gibney	July 31, 1855	I.
	Billings, A. C., and B. H. Ruggles	April 4, 1855	Design.
	Bills, John A.	July 3, 1855	XIV.
	Bingham, A., assignor to Bingham & Bailey	Oct. 9, 1855	XVII.
		Aug. 28, 1855	XVIII.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13478	Bingham, Albert, assignor to himself and A. J. Bailey.	Burglars' alarm.....	Aug. 21, 1855.....	XXII.
12711	Birkbine, Henry P. M.	Gas-retorta, construction of.....	April 18, 1855.....	IV.
13563	Beidsey & Bun. (See Barnum.)	Steam-gauge cocks.....	Sept. 18, 1855.....	VI.
13485	Bisbee, Albert.....	Wood, fire, machine for splitting.....	Aug. 28, 1855.....	XIV.
13634	Bisbee, William O.....	Corn-shellers.....	Oct. 9, 1855.....	I.
13773	Bishop, Charles.....	Marble-sawing machine.....	Nov. 13, 1855.....	XV.
13773	Bishop, James. (See Healey, John, assignor.)			
13773	Bishop, Geo. W.....			
12406	Bissell, Israel M. (See Paynter, David E.)			
12406	Bissell, Levi.....	Springs, metallic.....	Feb. 20, 1855.....	X.
13251	Bixler, W. H.....	Blinds, window.....	July 17, 1855.....	IX.
13208	Blackburn, William.....	Turning ship spars, &c., automatic machine for.....	July 10, 1855.....	XIV.
12307	Blackwood, John.....	Planters, seed.....	Jan. 30, 1855.....	I.
13746	Blair, A., and W. Clark.....	Lathe machine.....	Nov. 6, 1855.....	XIV.
13259	Blair, S. R., assignee. (See Hunter, J. R., assignor.)	Lamp, rosin-oil.....	July 17, 1855.....	V.
12434	Blake, Francis.....	Stoves, gas cooking.....	Feb. 28, 1855.....	V.
12775	Blake, James B.....	Clothes-pin, machine.....	May 1, 1855.....	XVII.
12292	Blake, H. & M.....	Window-blinds, iron.....	Jan. 23, 1855.....	IX.
13450	Blakeley, Henry.....	Candlesticks.....	Aug. 21, 1855.....	V.
13450	Blakeslee, C. W.....			
13450	Blakeslee, J. B., & C. F. (See Middlebrook, S. S.)			
13636	Blanc, Iran.....	Fibre, vegetable, preparing.....	Oct. 9, 1855.....	III.
712	Blanchard, A. J., assignor to Blanchard, Whittemore, & Co.	Stoves, cooking.....	May 30, 1855.....	Design.
711	Blanchard, A. J., assignor to Blanchard, Tarbett, & Co.	Stoves, parlor.....	May 30, 1855.....	Design.
13209	Blanchard, Francis B.....	Engines, air and steam.....	July 10, 1855.....	VI.
12405	Blanchard, George.....	Life-saving rafts.....	Feb. 20, 1855.....	VII.
13745	Blanchard, Noah F. (See Howell, Theodore, and Noah F. Blanchard.)			
13745	Blackmann, I. H. A.....	Plane, iron bench.....	Nov. 6, 1855.....	XIV.

13614	Blochmann, I. H. A.	Locks.....	Nov. 20, 1855.....	II.
13638	Bliss, Elhu	Watch chaina, swivel for.....	Mar. 20, 1855.....	XVIII.
12991	Blocher, David and George M.	Brick-burning.....	June 5, 1855.....	X.
12539	Blodgett, J. E.	Brake, wagon.....	Mar. 20, 1855.....	Disclaim.
	Blodgett, Jehiel E.	Brakes, wagon.....		III.
12343	Bloodgood, John H.	Felt goods, seamless, manufacturing.....	Feb. 6, 1855.....	IV.
12812	Blount, Alexander C.	Distillation, preparing turpentine for.....	May 8, 1855.....	IV.
13841	Blue, Dennis S.	Striker, blacksmiths.....	Nov. 27, 1855.....	II.
12669	Boardman, Byron, and George C. Sweet.	Cord, lines, twist, or machinery for winding up.....	April 10, 1855.....	III.
12665	Boardman, Horace	Boilers, steam.....	April 10, 1855.....	VI.
13538	Bocage, J. W.	Cotton stalks, standing machines for cutting.....	Sept. 12, 1855.....	I.
13114	Boeklen, R. (See Fenwick, R. W., & R. Boeklen.)	Wells, artesian, joints of pipes for.....	June 21, 1855.....	IX.
	Bolles, Jesse Norris, (assignor to H. J. Ockersbau- sen.)	Stones, machine for raising and transporting.....	April 10, 1855.....	XV.
12666	Bolles, Solomon E.	Engines, steam, condensers for.....	April 4, 1855.....	VI.
12619	Bollman, Louis	Sashes, window, hanging.....	Nov. 13, 1855.....	IX.
13774	Bomberger, Michael	Sewing-machines.....	May 22, 1855.....	III.
12939	Bond, Joseph, jr	Trusses, hernial.....	Jan. 23, 1855.....	XX.
12266	Bonwill, William M., M. D.	Boilers, steam.....	May 22, 1855.....	VI.
12993	Boone, Thomas G.	Grain-cleaning machines.....	Dec. 18, 1855.....	XIII.
13937	Booth, J. L.	Metal, sheet, rollers for corrugating.....	Jan. 23, 1855.....	II.
12268	Booth, Solomon G.	Planters, seed.....	April 4, 1855.....	I.
	Booth, Wm. M. (See Monnin, Charles.)			
12618	Borden, Chester B., and Benj. S. and Aaron R. McLean.			
	Botterill & Smith, assignees. (See Smith, James, assignor.)			
12502	Botum, James M.	Watchmakers' lathes, polishing apparatus for.....	Mar. 14, 1855.....	XVIII.
	Bowe, Wm. C. (See Whipple, Wm. C.)			
13505	Bowman, S.	Cotton stalks, standing, machines for cutting.....	Aug. 28, 1855.....	I.
13968	Bowles, Thos., assignor to R. M. Patrick.	Locks.....	Dec. 18, 1855.....	II.
12852	Bowman, Francis	Sills, rosin.....	May 15, 1855.....	IV.
13519	Boyd, Alexander	Telegraphic tide-gauges.....	Sept. 4, 1855.....	VIII.
13119	Boyd, Wm. and Wm. F.	Bride-winkers.....	June 26, 1855.....	XVI.
13421	Boyers, Jacob	Churns.....	Aug. 14, 1855.....	I.
13078	Boynton, Henry	Propeller, railway, reciprocating.....	June 19, 1855.....	VII.
13580	Boynton, L. W.	Flocks, machines for preparing.....	Aug. 7, 1855.....	III.
13480	Bradfield, Charles	Harvesters.....	Aug. 21, 1855.....	I.

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12892	Bradley, A. (See Harris & Zoiner, assignors)	Trap, rat.	May 22, 1855.	XXII.
13453	Bradley, Lucius B.	Traps for catching animals.	Aug. 23, 1855.	XXII.
12667	Bradley & Porter. (See Porter & Bradley.)			
	Brailley, Moses R. (See Harsen, Cornelius L.)			
12667	Brainard, Lyman, and Levi Newton.	Harrows, rotary.	April 10, 1855.	I.
12194	Brayshaw, Wm. (See Millville, J. G.)			
	Brayton, Robert.	Nuts and washers, machines for making.	Jan. 12, 1855.	II.
	Breed, et al. (See Crane, Martin H., assignor.)			
	Brett, J. & J. W., et al. (See Beasley, William, assignor.)			
	Breed, Crane, & Co. (See Crane, Martin H., assignor.)			
	Bridges, Albert. (See Davenport, Chas.)			
13451	Briggs, John C.	Pendulum, conical, to time-keepers, application of the.	Aug. 28, 1855.	VIII.
13374	Briggs, Samuel N.	Furnaces, hot-air.	July 31, 1855.	V.
12120	Brigham, Abram.	Looms.	Jan. 5, 1855.	III.
294	Brinckerhoff, Cornelius B.	Ploughs.	Jan. 30, 1855.	Release.
13121	Bristol, Charles B.	Wrench.	June 26, 1855.	II.
13382	Broadbent, John.	Looms.	Aug. 7, 1855.	III.
	Brooks & Keith. (See Keith, Jno. S., and Jno. Brooks.)			
12737	Brooks, Stephen P.	Piano-forte action.	April 18, 1855.	XVIII.
12503	Brown, Alanson.	Metals, machines for turning, boring, and slotting.	Mar. 14, 1855.	II.
13484	Brown, A. D. (assignor to Margaret L. Brown).	Gin, cotton, saws.	Aug. 23, 1855.	III.
13747	Brown, Alex'r H.	Brick-machines.	Nov. 6, 1855.	XV.
13156	Brown, Alanson P.	Windmills, self-regulating.	July 3, 1855.	XI.
13158	Brown, A. & F.	Boring and turning wood, machine for.	July 3, 1855.	XIV.
13422	Brown, A., & A. Coffin, jr.	Saws, staining, by atmospheric pressure.	Aug. 14, 1855.	XIV.
13517	Brown, Collins B.	Mowing-machines.	Sept. 4, 1855.	I.
13249	Brown, Chas. F.	Ordnance, mode of mounting.	July 17, 1855.	XIX.
12942	Brown, Chas. F.	Cartridges.	May 30, 1855.	XIX.

12431	Brown, Chas. W. (assignor to Geo. W. Banker and Geo. O. Carpenter.)	Mill, paint.....	Feb. 20, 1855.....	XIII.
13196	Brown, Edmund. (See Caraley, Hiram, assignor to self and Brown.)	.....	.....	.....
13211	Brown, Edward (assignor to Seoville Manufacturing Company.)	Daguerreotype face-plates or 'mats,' machine for bevelling and polishing the inner edges of.	July 3, 1855.....	XVIII.
13157	Brown, Eleazar, Jr.	Lubricating compounds.....	July 10, 1855.....	IV.
12269	Brown, Ephraim	Burglars' alarm.....	July 3, 1855.....	XXII.
12811	Brown, George A.	Hay-making machine.....	Jan. 23, 1855.....	I.
	Brown, H., et al: (See Smith, G, et al., assignors)	Planters, seed.....	May 8, 1855.....	I.
	Brown, H., et al. (See Smith, Brown, & Read, assignors)	.....	.....	.....
12121	Brown, John, and Stephen P. Bartlett.	Harvesters, grain and grass.....	Jan. 5, 1855.....	I.
13776	Brown, Job.....	Faucets, weighing attachment for.....	Nov. 13, 1855.....	XI.
12308	Brown, Job.....	Planters, seed.....	Jan. 30, 1855.....	I.
321	Brown, John.....	Hot-water apparatus.....	Aug. 14, 1855.....	Reissue.
746	Brown, J. C.....	Clock-frames.....	Dec. 11, 1855.....	Design.
13675	Brown, J. S., (assignor to Jas. Kent)	Lamps, lard.....	Oct. 9, 1855.....	V.
12943	Brown, Samuel W.....	Gas-regulators.....	May 30, 1855.....	V.
13210	Brown, Samuel W.....	Gas-regulators.....	July 10, 1855.....	V.
13377	Brown, Samuel W.....	Gas-regulators.....	Aug. 7, 1855.....	V.
13564	Brown, Samuel W.....	Cotton machinery for cleaning.....	Sept. 18, 1855.....	III.
12178	Brown, Stephen.....	Press, for printing different colors.....	Jan. 6, 1855.....	XVIII.
12620	Brown, Thomas.....	Ships' riding bits.....	April 4, 1855.....	VII.
	Brown, Thomas W. (See Campbell, Leonard.)	.....	.....	.....
	Brown, Vernon. (See Taggart, John, assignor.)	.....	.....	.....
	Brown, William H.....	.....	.....	.....
	Brown & Smith, assignors. (See Smith & Brown.)	.....	.....	.....
12155	Brown & St. John. (See St. John, M. W., and J. Brown.)	Purchases, suspended.....	Jan. 5, 1855.....	XII.
13159	Bruce, Gardner A.	.....	.....	.....
12813	Bruen, John T.....	Harvester reels.....	July 3, 1855.....	I.
12270	Brunner, Henry J.....	Stone and marble saws.....	May 8, 1855.....	XV.
	Brunner, Henry J. (See Beitel & Brunner.)	Stone, instrument for cutting out.....	Jan. 23, 1855.....	XV.
12435	Bryant, Samuel R.....	Anchor-tripper.....	Feb. 28, 1855.....	VII.
13136	Bryan, Bernard O.....	Ore, machine for cleaning.....	June 26, 1855.....	II.
12171	Buffum, Arnold.....	Ores, machine for crushing and pulverizing.....	Jan. 12, 1855.....	II.
13453	Buffum, A. C.....	Obstetrical extractor.....	Aug. 21, 1855.....	XX.



*Alphabetical List of Patentes—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13675	Buhler, Jos. ....	Syringes, injecting, construction of.....	Dec. 25, 1855.....	XX.
13674	Buhler, Jos. M. D. ....	Bath, vapor, pipes of a.....	Dec. 25, 1855.....	XX.
	Butt, George. (See Haggard, J., and George Butt, assignors.)			
12300	Butt, George. (See Haggard, John H.)	Rails, hand, for stairs.....	Jan. 23, 1855.....	IX.
13663	Butt, John M. ....	Sashes, window, mode of hanging.....	Dec. 4, 1855.....	IX.
	Bullard, E. W. ....			
	Bullock, D. (See Parkhurst and D. Bullock.)			
	Burch, James. (See Melville, James, and Joseph Burch.)			
	Burgee, Singleton F. (See Gambrill, Horatio N.)	Engines, steam, arrangement in double piston.....	Jan. 6, 1855.....	VI.
12179	Burgeas, Warren S. ....	Mowing and reaping machines.....	Sept. 18, 1855.....	I.
13565	Burgeas, William.....	Dovetailing machine.....	Jan. 5, 1855.....	XIV.
12122	Burley, Thomas H. ....	Pumps, &c., double reciprocating, split piston-rod for.	July 24, 1855.....	XI.
13299	Burnap, John A. ....	Can-sealing.....	Aug. 21, 1855.....	V.
13452	Burnet, William.....	Cranes.....	Dec. 25, 1855.....	XII.
13976	Burnett, B. J. ....	Metal, machine for punching.....	April 18, 1855.....	II.
12712	Burnett, M., and Charles Vanderwoerd.....	Harvesters, grain and grass.....	Jan. 5, 1855.....	I.
12123	Burnett, Marshall, and Charles Vanderwoerd.....	Wheels, wind, arrangements and combinations of machinery for regulating velocity of.	Dec. 18, 1855.....	XI.
13669	Burnite, Jeremiah, assignor to Burnite & Clark.....			
	Burnham, Charles. (See Wade, W. W., assignor.)	Pump, force, double-acting.....	Feb. 6, 1855.....	XI.
12342	Burnham, W. C. and J. S. ....			
	Bunn & Birdseye. (See Barnum.)			
13416	Burrows, John E. ....	Zinc, white, making.....	Aug. 14, 1855.....	IV.
13742	Burt, Henry.....	Marble, machines for sawing.....	Nov. 6, 1855.....	XV.
13938	Bush, T. C. ....	Saw-set.....	Dec. 18, 1855.....	XIV.
13378	Buseer, Jacob.....	Railroad signals.....	Aug. 7, 1855.....	IX.
	Butler, William H. (See Holmes, Richard G.)			
	Butler & Holmes. (See Holmes & Butler.)			
12504	Butt, Z. ....	Carts, self-loading.....	Mar. 14, 1855.....	X.
13250	Butterfield, C. H. ....	Lanterns.....	July 17, 1855.....	V.

13639	Butterfield, C. H.	Lantern-guards.	Sept. 12, 1855.	v.	
14006	Butterfield, C. H., assignor to Amory Houghton.	Lanterns, guards for.	Dec. 30, 1855.	v.	
129	Butterfield, J. S.	Gum-soaks.	Dec. 11, 1855.	Add'l Imp't.	
12124	Butterfield, J. S.	Fire-arms, locks for.	Jan. 5, 1855.	XIX.	
19990	Butts & Marden. (See Marden & Butters.)				
13777	Byington, Geo.	Planters, seed.	June 5, 1855.	I.	
12125	Caffrey, James.	Time indicators.	Dec. 25, 1855.	VIII.	
12180	Cahoon, P. S., & S. F. Ross.	Trap for catching animals.	Jan. 5, 1855.	XXII.	
12227	Camp, Lyman C., assignor to Phelps, Dodge, & Co.	Turning elliptical cylinders, chuck for.	Jan. 6, 1855.	XIV.	
13520	Camp, Mortimer M.	Kettles, machines for forming, from metal disk.	Jan. 12, 1855.	II.	
13333	Campbell, Andrew.	Chimney stack or cap.	Sept. 4, 1855.	V.	
12777	Campbell, Charles.	Printing presses, machine for feeding paper to.	July 24, 1855.	XVIII.	
13213	Campbell, Daniel.	Processes for purifying and cleansing wheat.	May 1, 1855.	IV.	
13864	Campbell, Daniel.	Saddle-trees.	July 10, 1855.	XVI.	
13455	Campbell, Dugald.	Saddles, military.	Dec. 4, 1855.	XVII.	
13454	Campbell, Edward.	Swimming-glove.	Aug. 21, 1855.	XXII.	
12894	Campbell, Leonard, assignor to L. Campbell and Thos. W. Brown.	Journal-box, glass.	Aug. 21, 1855.	X.	
13212	Campbell, S. N.	Gins, cotton.	May 22, 1855.	III.	
12853	Canfield, Henry E.	Sun shades.	July 10, 1855.	XXI.	
13637	Canfield, Henry E.	Hinges, spring, double-acting.	May 15, 1855.	II.	
12713	Carhart, Jeremiah.	Valves, cut-off, for oscillating engines.	Oct. 9, 1855.	VI.	
12345	Carpenter, Nelson B., and John Powers.	Melodeons.	April 18, 1855.	XVIII.	
12357	Carpenter, William B.	Jack, lifting, for moving rail cars.	Feb. 6, 1855.	XII.	
	Carpenter & Banker, assignees. (See Brown, assignor.)	Chair and crib, combined, for children.	Feb. 6, 1855.	XVII.	
13634	Carsley, Hiram, assignor to himself and Edmund Brown.	Graters, nutmeg.	Nov. 20, 1855.	XVII.	
313	Carter, Henry, and Jas. Rees.	Nut and washer machine.	June 19, 1855.	Reissue.	
	Carter, Henry, assignees. (See Steer, Isaac, assignor.)				
12714	Case, Jarvis.	Harvesters, grain and grass.	April 18, 1855.	I.	
12231	Case, Jarvis.	Planters, seed.	Jan. 17, 1855.	I.	
12192	Casselman, William I.	Forms, irregular, machine for turning.	Jan. 12, 1855.	XIV.	
13040	Capen, Frederick W.	Paddle-wheels.	Dec. 18, 1855.	VII.	
12984	Capron, Addison, assignor to A. Capron, J. S. Dennis, and H. M. Richards.	Sewing-machines.	May 3, 1855.	III.	
	Capron, Addison. (See Dennis, Jos. S.)				

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12669	Cate, S. M., and E. Jordan.....	Dies and stocks for ornamenting metal tubes, arrangement of.	April 10, 1855.....	II.
12814	Chamberlain, Dexter H. (See Hartshorn, John.)			
13423	Chamberlain, Dexter H.....	Lamps, for burning fluid.....	May 8, 1855.....	V.
13481	Chamberlain, Dexter H.....	Printing, hand-press for.....	Aug. 14, 1855.....	XVIII.
12271	Chamberlain, D. H., and John Hartshorn.....	Curtain-rollers.....	Aug. 21, 1855.....	XVII.
12319	Chamberlain, D. H., and John Hartshorn.....	Curtains, rollers for.....	Jan. 23, 1855.....	XVII.
309	Chamberlain, D. H., assignor to C. G. Howard, assignor to Chas. Thompson, jr., assignor to Peter Cooper.	Brush fountain.....	Jan. 30, 1855.....	XVII.
		Metal bars, machinery for reducing.....	May 15, 1855.....	Reissue.
12498	Chamberlain, Ramsay, & Hastings. (See Hastings, Jael, <i>et al.</i> )			
	Chamberlain, Dexter H., assignor to Henry Woodward.	Gas, illuminating, apparatus for purifying.....	March 7, 1855.....	IV.
730	Chambers, G. W., assignor to P. A. Palmer	Stoves, cooking, ovens for.....	Sept. 18, 1855.....	Design.
12993	Champion, Thomas.....	Boilers, steam, feeding water to.....	June 5, 1855.....	VI.
13146	Champion, Thomas.....	Boilers, steam-furnace.....	June 26, 1855.....	VI.
12860	Champion, Thomas.....	Steam boilers.....	Feb. 6, 1855.....	VI.
12899	Chandler, Rufus K.....	Shirts, wristbands of.....	May 22, 1855.....	XXI.
13465	Chandler, T. A.....	Plough mold boards, making.....	Dec. 4, 1855.....	I.
12854	Chaplin, Handel S.....	Sash, window, fixtures.....	May 15, 1855.....	IX.
13901	Chapman, Henry E.....	Boot and shoe peg-cutters.....	Dec. 11, 1855.....	XVI.
12540	Chapman, W. Z. W. and J. W.	Curtains, knobs for fastening, and for other like purposes.	Mar. 20, 1855.....	XVII.
13300	Chase, Frank.....	Blinds, window.....	July 24, 1855.....	IX.
12898	Chase, John, jr.....	Brick-presses.....	May 22, 1855.....	XV.
12478	Chase, Nehemiah B., and Chancey W. Saunders.....	Cultivators, hand.....	Mar. 7, 1855.....	I.
13842	Chase, Pliny E.....	Steam-heating apparatus.....	Nov. 27, 1855.....	V.
	Chase, North, & North, assignees. (See Gibbs, S. W., assignor.)			

12760	Chatfield, Henry, assignor to Henry Chatfield and T. L. Snyder.	Bakes .....	April 18, 1855.	I.
12855	Chester, Charles T.	Galvanic batteries, connecting clamps for the plates of .....	May 15, 1855.	VIII.
13815	Chichester, L. S.	Gins, cotton .....	Nov. 20, 1855.	III.
12856	Chilcott, Jno., and James Scrinegeone.	Sewing-machines .....	May 15, 1855.	III.
12670	Chilcott, Jno., and Robert Snell.	Boot forms .....	April 10, 1855.	XVI.
12401	Childs, A. B., and H. W. Dickinson.	Printing-presses, machine for feeding paper to .....	Feb. 20, 1855.	XVIII.
13777	Chipman, William C.	Marble-sawing machine .....	Nov. 13, 1855.	XV.
13778	Chope, Thomas.	Shafts to axles, attaching .....	Nov. 13, 1855.	X.
	Churchill, Henry. (See Hatch, Jesse W., and Churchill.)			
13457	Cisco, John L.	Carriages .....	Aug. 28, 1855.	X.
13697	Clapp, Cyrus.	Scythe-fastenings .....	Oct. 23, 1855.	I.
12659	Claroni, Charles, assignor to C. Claroni and Geo. P. Field.	Harrowa .....	April 4, 1855.	I.
13816	Clark, D. W.	Pumps, double-acting .....	Nov. 20, 1855.	XI.
12997	Clark, D. W., and S. H. Gray.	Wheels, carriage .....	May 22, 1855.	X.
12376	Clark, Henry.	Gins, cotton .....	Feb. 13, 1855.	III.
13542	Clark, John.	Ventilation, self-regulating valve for .....	Sept. 12, 1855.	V.
	Clark & Blaikie. (See Blaikie & Clark.)			
	Clark & Burnite. (See Burnite, Jeremiah, assignor.)			
12404	Clarke, George B.	Chimney safes .....	Feb. 20, 1855.	V.
13503	Clarke, Major B.	Gin, opening and feeding cotton to the machinery for .....	Dec. 4, 1855.	III.
13026	Clarke, Thomas C.	Filter .....	June 13, 1855.	XI.
13127	Clarke, Thomas C.	Filtro hydrant .....	June 13, 1855.	XI.
13123	Clayton, Henry.	Brick and tile machines .....	June 26, 1855.	XV.
12166	Clayton, Sharpless.	T-reth .....	Jan. 6, 1855.	XX.
12377	Clement, Edwin B.	Churns .....	Feb. 13, 1855.	I.
13424	Cleveland, Charles.	Faucets, ventilating .....	Aug. 14, 1855.	XI.
13566	Cleveland, Newell, & James J. Johnston.	Smoothing-irons, heaters for .....	Sept. 18, 1855.	XVII.
13215	Clinton, Lyman.	Straw-cutters .....	July 10, 1855.	I.
13902	Close, Charles T.	Luke and fountain .....	Dec. 11, 1855.	XVIII.
13122	Clow, A. and C. N.	Corn-bellers .....	June 26, 1855.	I.
12935	Coburn, Francis N., assignor to Euggles, Nourse, Mason, & Co.	Screw-wrench .....	May 22, 1855.	II.
13334	Cochran, Robert.	Millstones, method of hanging .....	Aug. 7, 1855.	XIII.
14363	Cocfrane, John.	Trucks, locomotive .....	Feb. 6, 1855.	X.

*Alphabetical List of Patentes—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13540	Cochrane, John	Marble, machines for sawing	Sept. 12, 1855	XV.
13779	Cocke, John H.	Car, railroad, seats	June 19, 1855	X.
	Coe, Loring	Screw-wrenches	April 16, 1855	Extension.
12195	Coffin, David N. B., jr.	Cook, stop	Jan. 12, 1855	XI.
12344	Coffin, David N. B., jr.	Daguerreotype-plate holders	Feb. 6, 1855	XVIII.
726	Coggershall, Wm. T.	Stoves, cooking	Sept. 4, 1855	Design.
13160	Colburn, Sylvester	Harvesters, grain and grass	July 3, 1855	I.
12298	Cole, Isaac J.	Crowbar, compound	Jan. 23, 1855	XII.
13866	Cole, John A.	Marble, tapering blocks of, machines for sawing out	Dec. 4, 1855	XV.
13252	Cole, Richard H.	Nut-machines	July 17, 1855	II.
13340	Colgate, Henry	Starch-making	July 24, 1855	IV.
12895	Colver, Lewis W.	Planters, seed	May 22, 1855	I.
12996	Colver, Lewis W.	Washing-machines	June 5, 1855	XVII.
12258	Conant, Hezekiah	Proj-ctiles, moulds for casting	Jan. 17, 1855	XIX.
12233	Conant, Jonathan S., assignor to A. B. Ely	Sowing-machines	Jan. 17, 1855	III.
	Conant, Wm. E. (See Hubbard, Geo. W., and W. E. Conant.)			
13541	Coney, Geo. H.	Connecting-rods, &c., method of securing keys in	Sept. 12, 1855	XIII.
729	Conklin, James H., assignor to S. B. Sexton	Stoves	Sept. 12, 1855	Design.
12671	Connally, Thomas C.	Votes in legislative bodies, machines for recording	April 10, 1855	XXII.
13333	Conner, James, and Thomas Newby	Drills, machine	Aug. 7, 1855	II.
13301	Connet, Matthew F.	Turning cylinders of wood, &c., machine for	July 24, 1855	XIV.
12557	Conover, Jacob A.	Wood, machine for splitting	May 15, 1855	XIV.
12738	Converse, William F.	India-rubber springs	April 18, 1855	IV.
12272	Comstock, George R.	Carriages	Jan. 23, 1855	X.
12273	Comstock, George R.	Carriage-seats	Jan. 23, 1855	X.
13337	Comstock, George R.	Presses, cheese	July 24, 1855	XII.
12770	Comstock, John, assignor to Peter Naylor	Hammers, forge	April 24, 1855	II.
12994	Coogan, P. J.	Sewers, arrangement of drains for	June 5, 1855	IX.
13576	Cook, James M.	Cars, railroad, dust deflector for windows of	Oct. 16, 1855	X.
13780	Cook, Ransom	Boring implements, making	Nov. 13, 1855	II.

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12583	Cook, Ransom	Augers, machine for turning the lips of.....	Mar. 28, 1855.....	XIV.
13081	Cook, Richard F.	Fish-hook.....	June 19, 1855.....	XXII.
13080	Coon, S. Park.	Cars, railroad, apparatus for replacing upon the track.	June 19, 1855.....	X.
	Cooper, Peter. (See Chamberlain, D. H., assignor.)			
13939	Cooper, W. E.	Locomotives, exhaust-pipes of, nozzle for.....	Dec. 18, 1855.....	VI.
	Copeland, C. W.	Engine, arranging the low pressure or condensing steam, so as to adapt its parts to be used by vessels for ocean service.		Disclaimer.
	Copeland, C. W.	Engine, arranging the low pressure or condensing steam, so as to adapt its parts to be used by vessels for ocean service.		Extension.
	Copeland, George.	Looms.....	Jan. 23, 1855.....	III.
12993	Copperthwaite, C. J.	Sewing-machines.....	Oct. 9, 1855.....	III.
12436	Corbett, Henry V.	Vessels, sunken, mode of raising.....	Feb. 28, 1855.....	VII.
13779	Corbett, V. P.	Cars, railroad, devices for partially excluding dust from.	Nov. 13, 1855.....	X.
12359	Corbett, V. P.	Ships and other vessels, constructing.....	Feb. 6, 1855.....	VII.
12541	Corbett, V. P.	Ventilation, self, method of, for railroad cars.....	Mar. 20, 1855.....	V.
13943	Corbett, Thomas H.	Belt-couplings.....	Nov. 27, 1855.....	XIII.
12672	Corey, Jason W.	Planters, seed.....	April 10, 1855.....	I.
12757	Corey, Jason W.	Washing-machines, spring connecting-rods for.....	April 24, 1855.....	XVII.
	Cosley, Thomas J. (See Meblitt, Jonathan, Jr., and T. J. Cosley)			
12575	Cotton, Charles W.	Augers, attaching to handles.....	Mar. 20, 1855.....	XIV.
	Covell, W., and A. Bennett. (See Turner, Joshua, Jr., assignor.)			
12776	Cowdry, Chauncey, Orrin Tolls, and Chauncey C. Tolls.)	Boring and tenoning machine, wheelwrights'.....	May 1, 1855.....	XV.
12542	Cowing, John P.	Pumps, device for air-chamber of.....	Mar. 20, 1855.....	XI.
12157	Cowles, Millard.	Stereotyping, apparatus for.....	Jan. 5, 1855.....	XVIII.
	Cowles & Smith. (See Smith, S. R., and E. Cowles)			
13479	Cram, John, assignor to John and John S. Cram.	Chairs, folding.....	Aug. 21, 1855.....	XVII.
12196	Crane, Aaron D.	Pendulums, torsion, for time-pieces.....	Jan. 12, 1855.....	VIII.
	Crane, J. E. (See Johnson, J.)			
698	Crane, M. H., assignor to Crane, Breed & Co.	Coffins, metallic.....	Jan. 23, 1855.....	Design.
301	Crane, Martin H., assignor to Crane, Breed & Co.	Coffins, metallic.....	Mar. 14, 1855.....	Release.
734	Crane, Martin H., assignor to Crane, Breed & Co.	Burial-cases.....	Oct. 9, 1855.....	Desi

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12560	Crane, Ezra A., and Henry J. Lewis (assignors to Ezra A. Crane.)	Scrapers for removing dirt from boots and shoes.	April 4, 1855.	XVII.
13979	Crane, Thomas.	Pumps, rotary.	Dec. 25, 1855.	XI.
13639	Greener, John B.	Coal-sifter.	Oct. 23, 1855.	V.
12815	Cresson, Stewart & Peterson. (See Beesley, J., and E. J. Delany, assignors.)	Bolta, machine for making.	May 8, 1855.	•
13714	Crocker, Wm. R.	Corks, machine for manufacturing.	Oct. 30, 1855.	II.
13121	Crooke, Martin.	Doors, weather strips for.	June 26, 1855.	XIV.
13214	Cronk, James E.	Pump-barrel, device to allow escape of waste water from.	July 10, 1855.	IX.
13482	Crooke, Jno. J.	Window-shades.	Aug. 21, 1855.	XI.
	Crosby, Joseph B., et al. (See Stevens, E. M., et al.)	Window-shades.	Aug. 21, 1855.	XVII.
	Crosby, Pearson.	Mill-saw, for resaying boards and other timber.	Nov. 2, 1855.	Extension.
12543	Croxon, H. T. (See Tubbs, E. A., assignor)	Barrel-heads, cutting.	Mar. 20, 1855.	XIV.
12479	Crum, Charles.	Bread, processes for making.	Mar. 7, 1855.	XVII.
13698	Cumberland, Wm. W.	Hat-bodies, felting.	Oct. 23, 1855.	III.
13385	Cummings, Dewelt C.	Straw-cutters.	Aug. 7, 1855.	I.
12535	Cunningham, Chas. (assignor to John C. Pedrick).	Benzole vapor apparatus.	Mar. 14, 1855.	IV.
13978	Currey, Robert L.	Brake, steam, double-acting.	Dec. 25, 1855.	X.
12544	Curtis, Charles G.	Pump.	Mar. 20, 1855.	XI.
13781	Curtis, E. D.	Seeding-machines.	Nov. 13, 1855.	I.
13198	Curtis, J., and S. Hoard.	Metre, water.	July 3, 1855.	XI.
12806	Cushman, Robert.	Knitting machines, stop motion of.	May 22, 1855.	III.
13456	Dale, John D.	Wrench.	Aug. 21, 1855.	II.
12995	Dana, Chas. H.	Planters, seed.	June 6, 1855.	I.
	Dandridge & Sweeney, assignees. (See Jno. Sweeney, assignor.)	Window-shades.	Dec. 25, 1855.	IX.
13990	Danforth, Thomas.	Bedsteads, invalid.	May 30, 1855.	XVII.
12914	Daniels, E.	Grain, threshers and cleaners of.	Feb. 13, 1855.	I.
12378	Daniels, George.			

13024	Darker, Wm., Jr. (assignor to J. B. Thompson).....	Spinning-ring frame .....	June 5, 1855.....	III.
1305 5	Darling, Levi B.....	Processes for refining jewellers' scraps .....	Mar. 28, 1855.....	IV.
13639	Davenport, Charles.....	Steam, heating buildings by, apparatus for .....	Oct. 9, 1855.....	V.
	Davenport, Charles, and Albert Bridges.....	Railroad carriages, the manner of constructing, so as to ease the lateral motion of the bodies thereof.	May 2, 1855.....	Extension.
13772	Davies, John W.....	Chimney-cap .....	Nov. 6, 1855.....	V.
12545	Davis, Abbott B.....	Cartridge, shot .....	Mar. 20, 1855.....	XIX.
12787	Davis, George E.....	Plane-stock, bench.....	May 1, 1855.....	XIV.
	Davis, George N., assignee. (See Hicks, L. E., assignor)			
13981	Davis, Isaac.....	Hair-whipping, machinery for.....	Dec. 25, 1855.....	III.
13335	Davis, Merwin.....	Printing-press .....	July 24, 1855.....	XVIII.
13469	Davis, H. W. & D.....	Vise .....	Aug. 28, 1855.....	II.
12816	Daugherty, Thomas.....	Boot-crumps .....	May 8, 1855.....	XVI.
13128	Day, Charles M.....	Saw-mills, &c. feed-motion for .....	June 13, 1855.....	XIV.
13782	Day, Joseph C.....	Bottle-fastenings, ring and gudgeons for.....	Nov. 13, 1855.....	XXII.
13941	Day, Joseph C.....	Fire-arms .....	Dec. 18, 1855.....	XIX.
13701	Day, Samuel S.....	Daguerreotype, plate vise.....	Oct. 23, 1855.....	XVIII.
12190	De Berque, Charles.....	Propeller.....	Jan. 12, 1855.....	VII.
12158	Dederich, Levi.....	Yokes, ox .....	Jan. 9, 1855.....	I.
12346	Deering, Richard, sr.....	Water-wheels, current.....	Feb. 6, 1855.....	XI.
12998	Degges, W. H.....	Brick-machines .....	June 5, 1855.....	XV.
12997	Degges, W. H.....	Brick-machines, soak-pits of.....	June 6, 1855.....	XV.
13302	Degenor, F. O.....	Paging-machine .....	July 24, 1855.....	XVIII.
12622	De Guinon, Richard V.....	Anchor .....	April 4, 1855.....	VII.
12621	Dehart, Levi M.....	Paddle-wheel, adjustable .....	April 4, 1855.....	VII.
12546	Delano, Howard.....	Furnaces, feeding fuel to .....	Mar. 20, 1855.....	V.
	Delany, Edward J. (See Beesley, Jacob)			
	Delaware Air Spring Manufacturing Company. (See Heyward, Jas. F., assignor.)			
13177	Dennin, W. C., assignor to A. B. Ely.....	Books, &c., machine for paging .....	Aug. 21, 1855.....	XVIII.
12480	Demolon, René, Charles, and George, Alexander Charles Thurneyson.	Manure soil, treating fish for .....	Mar. 7, 1855.....	I.
13514	Demarest, John, assignor to the J. L. Mott Iron Works.	Flasks for moulding bath-tubs .....	Aug. 28, 1855.....	II.
	Dennis, Capron and Richards. (See Capron, Addison, assignor.)			
13409	Dennis, Jas. S., and Addison Capron, assigns to themselves and Henry M. Richards.	Hooks and eyes to cards, machine for attaching.....	Aug. 7, 1855.....	XXII.



## Alphabetical List of Patentees.—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13844	Dennie, H. H. Dennison & Bradley. (See Porter & Bradley, assignors.)	Fences .....	Nov. 27, 1855.....	IX.
13567	Densmore, Joel.....	Boilers, steam, feed-water apparatus of .....	Sept. 18, 1855.....	VI.
12403	Denzler, Frederick.....	Locks, bank .....	Feb. 20, 1855.....	II.
13063	De Saxe, Charles, assignor to Thomas H. Bate.....	Fish, serpentine spinner to catch.....	June 13, 1855.....	XXI.
13216	Deshon, Daniel, 2d.....	Spark arresters.....	July 10, 1855.....	VI.
12380	Dexter, Henry T.....	Boats, wharf.....	Feb. 13, 1855.....	VII.
13559	Dey, J. W. S. (See Vanzile, Griffin and Dey.)	Pump, force double-acting.....	Sept. 12, 1855.....	XI.
12379	Dick, Thos. J.....	Dress, stays for articles of.....	Feb. 13, 1855.....	XXI.
12451	Dickey, John.....	Harness saddle-trees.....	Mar. 7, 1855.....	XVI.
13161	Dickey, Julius C.....	Mill-step.....	July 3, 1855.....	XIII.
13700	Dickey, Julius C.....	Gas-regulators .....	Oct. 23, 1855.....	V.
12558	Dickinson, Henry W.....	Sewing-machines, cording guide for.....	May 15, 1855.....	III.
13737	Dickinson, Henry W., assignor to L. B. Swan. Dickinson & Childs. (See Childs, A. B., and H. W. Dickinson.)	Printing-presses, machine for feeding paper to.....	Oct. 30, 1855.....	XVIII.
13298	Dickinson, J., and O. White.....	Wind-mill, self-regulating .....	July 19, 1855.....	XI.
12554	Dietz, A., and J. G. Dunham.....	Harvesters, grain and grass .....	Mar. 28, 1855.....	I.
12599	Dietz, Andrew, and Jno. C. Dunham.....	Reaping and mowing machines.....	June 5, 1855.....	I.
13217	Dill, Rufus M.....	Leams.....	July 10, 1855.....	III.
308	Dillaway, Hiram.....	Glasses, construction of moulds for pressing.....	May 1, 1855.....	Release.
13488	Dimpfel, Frederick P.....	Boilers, steam method of facilitating the removal of incrustation from.....	Aug. 28, 1855.....	VI.
13867	Dismoor, O. R., and L. J. Bartlett.....	Shoe-soles, &c., instrument for chamfering the edges of.....	Dec. 4, 1855.....	XVI.
12859	Dixon, George.....	Lubricator, velocitrot.....	May 15, 1855.....	XII.
329	Dixon & Andrews. (See Andrews, Jas., assignor.) Dodger, L. P., and Wm. F..... Dodge, Phelps, & Co. (See Camp, Lyman C., assignor.)	Pumps.....	Sept. 25, 1855.....	Release.

12310	Doe, Alfred.....	Ploughs.....	Jan. 30, 1855.	i.
13693	Doolittle, John H., assignor to American Hosiery Company.....	Knitting machines.....	Oct. 16, 1855.	III.
12159	Doria, St. John O.....	Fuel, composition for.....	Jan. 5, 1855.	v.
13748	Doyle, Thomas.....	Engines, two beam, with parallel shafts, arrangement of.....	Nov. 6, 1855.	VI.
12715	Drake, Alfred.....	Engines, explosive gas.....	April 18, 1855.	VI.
12900	Drawbaugh, Daniel.....	Stave machine.....	May 22, 1855.	XIV.
12716	Dresser, Nathan.....	Lubricating compound.....	April 18, 1855.	IV.
13835	Drew, Francis, assignor to F. Drew and S. S. Gray.....	Jack, lifting.....	Nov. 20, 1855.	XII.
13942	Driggs, S. B.....	Piano-fortes.....	Dec. 18, 1855.	XVIII.
13336	Duboce, Augustin.....	Propellers.....	July 24, 1855.	VII.
13904	Du Bois, M. D.....	Valve-gear for oscillating engines.....	May 22, 1855.	VI.
13620	Dulany, George L.....	Mill-bushes.....	June 13, 1855.	XIII.
13115	Dulany, George L., assignor to Reuben Allen.....	Mill-dress.....	June 19, 1855.	XIII.
13638	Dungan, John G.....	Churns.....	Oct. 9, 1855.	I.
	Dunham, E. G. (See Jackman, E., and E. G. Dunham.)			
13992	Dunham, J. G. (See Dietz, A.)	Saws, method of hanging.....	Dec. 25, 1855.	XIV.
13386	Dunham, Soranus.....	Forms, irregular, cutter-heads for.....	Aug. 7, 1855.	XIV.
13124	Dunlap, Daniel.....	Sashes, window, made of hanging.....	June 26, 1855.	IX.
13568	Dunzack, Daniel N.....	Felling trees, machine for.....	Sept. 14, 1855.	XIV.
13902	Durgen, Charles A.....	Sewing-machines.....	May 22, 1855.	III.
12546	Duryea, Hendrick V., assignor to Oswego River Starch Company.....	Starch, apparatus for manufacturing.....	May 8, 1855.	IV.
12674	Duryea, Wright.....	Card-exhibitor.....	April 10, 1855.	XXII.
12903	Duryea, Wright.....	Umbrellas.....	May 22, 1855.	XXI.
13425	Dutcher, J. J.....	Boilers, steam.....	Aug. 14, 1855.	VI.
12673	Dutcher, Josiah J.....	B-ilers, locomotive.....	April 10, 1855.	VI.
13162	Dwyer, Robert D.....	Lightning-rods, attachments for.....	July 3, 1855.	VIII.
12901	Dyott, M. B.....	Furnace, warm-air.....	May 22, 1855.	v.
12239	Dyott, Michael B.....	Lamp-shades.....	Jan. 17, 1855.	v.
12505	Eakin, C. M.....	Railroad rails, excluding dirt from.....	Mar. 14, 1855.	IX.
13125	Eakins, Samuel.....	Pitcher, ice.....	June 26, 1855.	XVII.
12675	Eames, Benjamin R.....	Door fasteners, portable.....	April 10, 1855.	II.
12382	Easterly, James.....	Stove, magazine smoke-consuming.....	Feb. 13, 1855.	v.
13544	Enathan, Robert S.....	Saw-mill carriages.....	Sept. 12, 1855.	XIV.
12553	Estman, Benjamin.....	Bedsteads, invalid.....	July 17, 1855.	XVII.
13738	Eaton, D. E., assignor to D. E. and P. O. Eaton.....	Burglars' alarm.....	Oct. 30, 1855.	XXII.

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No.	Names of patentee.	Invention or discovery.	Date.	Class.
12311	Eaton, James Ely & Goshen. (See Goshen, James G., and Samuel M. Ely.)	Dies for cap-tube machines.	Jan. 30, 1855.	II.
12274	Ecclies, James	Looms.	Jan. 23, 1855.	III.
13903	Echols, Josephus	Boilers, steam, water-gauges for.	Dec. 11, 1855.	VI.
12658	Eddy, Grow. (See Mann, Russell, assignor.) Edgcomb, George W. Edson, Henry L. (See Wynkoop, Francis G., assignor.)	Washing-machines.	April 4, 1855.	XVII.
13254	Edson, Jacob	Pump, valves of, method of operating	July 17, 1855.	XI.
13749	Edwards, Abraham. (See Gatiss, Jno. H., assignor.)	Lubricators, automatic, for railroad-car axles.	Nov. 6, 1855.	XII.
694	Egan, Michael	Daguerreotype-cases.	.....	Design.
13349	Eichmeyer, Henry A.	Paper, machine for ruling and paging.	July 31, 1855.	XVIII.
13350	Elder, John A., and John Richardson.	Warps, machinery for sizing and dressing.	July 31, 1855.	III.
13868	Elder, John A., and Wm. J. Thorn	Cooking apparatus, flues and dampers of, arrangement of	Dec. 4, 1855.	V.
13244	Elgar, John.	Wind-mill, self-regulating.	July 10, 1855.	XI.
13457	Eling, Henry	Cocks, stop, basin.	Aug. 21, 1855.	IX.
13543	Elliot, Jas D.	Cloth, folding and measuring, machinery for	Sept. 12, 1855.	III.
13291	Elliot, W. H.	Cans, preserve, devices for sealing.	July 17, 1855.	XVII.
13303	Elliot, W. H.	Hydro-pneumatic, machine for exhausting and sealing vessels.	July 24, 1855.	XI.
12586	Elliot, W. H. (See Kirk, Joseph S.)	Governors, combination of speed and resistance.	Mar. 26, 1855.	IX.
13640	Elliot, William H.	Corn-shellers	Oct. 9, 1855.	I.
12676	Ellis, Selathiel	Walls, concrete, framing for building	April 10, 1855.	IX.
12717	Ellithorp, S. B. (See Stevens, L., and S. B. Ellithorp)	Gas-generator, putting a, in a parlor stove	April 18, 1855.	V.
13255	Ellis, Edwin. Ely, A. B. (See J. Conant, assignor.)	Metal tubes, machines for forming.	July 17, 1855.	II.

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12197	Ely, A. B. (See Demain, W. C., assignor.)	Saws, circular, arranging and driving.	Jan. 19, 1855.	XIV.
12437	Emery, William B.	Boring machines, adjusting cylinders in.	Feb. 28, 1855.	XIV.
12138	Emery, William B.	Planing machines, method of adjusting stuff in.	Feb. 28, 1855.	XIV.
13506	Emerson, James.	Ship's windlass.	Aug. 28, 1855.	VII.
13593	Emerson, James.	Cables, chain, pressure-stoppers for.	Sept. 25, 1855.	VII.
12718	Emerson, James.	Ships' windlasses.	April 18, 1855.	VII.
12953	Emmons, Phineas.	Cracker-machines.	Feb. 13, 1855.	XVII.
13304	Emmons, Phineas.	Hat-bodies, machines for sizing.	July 24, 1855.	III.
13969	England, Joseph T.	Car, railroad, coupling.	Dec. 4, 1855.	X.
13348	Eriessou, John.	Engines, air.	July 31, 1855.	VI.
12381	Esterly, George.	Ploughs.	Feb. 13, 1855.	I.
13100	Ettlack, Thos.	Washboards to walls, mode of securing.	June 5, 1855.	IX.
14007	Evans, Charles, assignor to C. Evans and G. K. Goodwin.	Grasses, revolving.	Dec. 25, 1855.	V.
12384	Evans, Hampton W.	Levels, spirit.	Feb. 13, 1855.	VIII.
13082	Evans, L. G.	Ploughs.	June 19, 1855.	I.
12198	Everitt, Charles G.	Wrenches, ratchet.	Jan. 12, 1855.	II.
12138	Ewbank, Jas. S., assignor to Wm. Everdell, jr.	Spurs.	Jan. 30, 1855.	XXII.
12860	Fahrney, Ezra.	Hominy machines.	May 15, 1855.	XVII.
13870	Fairbairn, Peter, and John Hargrave.	Wool-combing machines.	Dec. 4, 1855.	III.
12385	Fairbanks, C. & T., & Co. (See Sanborn, Augustus, assignor.)	Boiler, steam, chimneys.	Feb. 13, 1855.	VI.
13521	Farmer, Aaron D., and Ransom Rathbone.	Electrotype shells, mould for backing.	Sept. 4, 1855.	XVIII.
12199	Farnam, Gilbert B.	Pump, forcing.	Jan. 12, 1855.	XI.
318	Farnam, G. B., and O. Snow. (See Borden, John S.)	Presses, cotton.	July 17, 1855.	Reissue.
13702	Fay, Samuel.	Carpets, finishing.	Oct. 23, 1855.	III.
12200	Felt, Charles W.	Lights, entry.	Jan. 12, 1855.	V.
12181	Felton, Amory.	Mills, grinding.	Jan. 6, 1855.	XIII.
13083	Feuchtwanger, Lewis. (See Beer, Sigismund, assignor.)	Coal-screen.	June 19, 1855.	V.
13337	Fennell, James P.	Planters, corn.	Aug. 7, 1855.	I.
	Fenwick, B. W., and B. Beeklin.			

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12537	Ferguson, Alexander. (See Stott & Ferguson.)	Chairs	Mar. 28, 1855.	XVII.
12934	Ferries, Lemuel W.	Shovel-handles, machine for cutting the inside hold of.	June 19, 1855.	XIV.
13163	Fetter, G., and J. L. Pennock	Locking-latches, for doors.	July 3, 1855.	II.
13351	Field, Edmund	Sawing cross-cut, machine.	July 31, 1855.	XIV.
	Field, Frederick			
13458	Field, George P. (See Clarendi, Charles.)	Water-wheel pressure	Aug. 21, 1855.	XI.
	Fields, Wm., and Solomon Gerhard			
	Filley, G. F. (See Vedder, N. S., and E. Ripley, assignors.)			
	Filley, G. F. (See Vedder, N. S., assignor.)			
	Fincher, J. C. (See Gray, A. F., and J. C. Fincher.)			
13836	Finger, Louis, assignor to L. Finger and L. Schell.)	Faucet, filtering	Nov. 20, 1855.	XI.
13717	Fink, John. (See Fox, D. H.)	Ranges, cooking, and air-heaters	Oct. 30, 1855.	V.
13164	Finley, George	Sand, machines for washing.	July 3, 1855.	XV.
12719	Finkel, Conrad W.	Sugar, processes for melting.	April 18, 1855.	IV.
12788	Firth, Thomas	Journal boxes, alloys for	May 1, 1855.	X.
13001	Fischer, William	Music, method of composing	June 5, 1855.	XVIII.
12365	Fiske, L. W.	Compositions for bleaching and stuffing leather.	Feb. 6, 1855.	IV.
12369	Fiske, L. W.	Tanneries, working liming vats in	Feb. 6, 1855.	IV.
13715	Fisher, Luther B.	Saw-mill dogs, device for gauging and setting.	Oct. 30, 1855.	XIV.
13718	Fisher, Luther B.	Straw-cutters.	Oct. 30, 1855.	I.
13784	Fitts, R. B., et al. (See Messer, Daniel W., assignor.)	Marble-sawing machine	Nov. 13, 1855.	XV.
13030	Fitzgerald, Eliha.	Vessels, sunken, buoys for raising	June 13, 1855.	VII.
319	Fitzgerald, Jesse, assignor to J. Pierce, assignor to D. A. Fitzgerald.	Treenails, machinery for dressing	July 17, 1855.	Reissue.
12974	Fitzpatrick, Francis	Straw-cutters.	May 30, 1855.	I.
12126	Flaunders, Thomas J.	Saws, circular, construction and mode of driving.	Jan. 5, 1855.	XIV.
12780	Fleming, James	Files, machine for sawing off, under water.	May 1, 1855.	IX.

13031	Fletcher, Calvin.....	Furnaces, supplying, with hot air.....	June 13, 1855.....	V.
13126	Fletcher, M. R..... Fogg & Smerby. (See Smerby, G. A., & Charles W. Fogg.)	Tidal alarm apparatus.....	June 20, 1855.....	XI.
12751	Foglesong, William G., assignor to Foglesong & Anderson.	Carriages, folding tops for.....	April 18, 1855.....	X.
13166	Folsom, Charles.....	Book-clasps.....	July 3, 1855.....	XVIII.
12720	Fondé, Charles H.....	Dredging-machines.....	April 18, 1855.....	IX.
12147	Foute, Edward H.....	Slides and ways, protecting from dust.....	Jan. 5, 1855.....	XII.
12412	Forbush, Edwin A.....	Sewing machines.....	Feb. 20, 1855.....	III.
12721	Forbush, Eliakim B.....	Harvesters, grain and grass.....	April 18, 1855.....	I.
13032	Ford, William S.....	Sashes, window.....	June 13, 1855.....	IX.
	Fortan & Hoffman. (See Hoffman, Frederick W., and Charles W. G. Fordan.)			
13371	Fornervok, H.....	Feet-warmers.....	Dec. 6, 1855.....	V.
13716	Forrester, J. N.....	Saws, mulley, method of hanging.....	Oct. 30, 1855.....	XIV.
12264	Foster, A., and E. A. Messinger, adm'rs, and Wm. A. Spencer, adm'r of John A. Messinger, deceased, assignors to A. Foster.	Block building.....	Jan. 17, 1855.....	XV.
	Foster, D. P., and James Sargent. (See Tolman, C. C., assignor.)			
12506	Foster, Elmer.....	Vessels, sailing, hoop-jacks for.....	Mar. 14, 1855.....	VII.
12722	Foster, Walter K.....	Pencil-sharpeners, moulds for casting.....	April 18, 1855.....	XVIII.
12733	Fowler, De Grasse, and George.....	Metal, machines for punching.....	April 18, 1855.....	II.
12312	Fowler, George.....	Pumps, force, double-acting.....	Jan. 30, 1855.....	XI.
720	Fowler, Minard H., and Enoch Jacobs.....	Railings, iron.....	Aug. 21, 1855.....	Design.
13755	Fowler, T.....	Pins, separating.....	Nov. 13, 1855.....	II.
13165	Fowler, Thomas.....	Knitting-machines.....	July 3, 1855.....	III.
12817	Fowler, William.....	Faucet.....	May 8, 1855.....	XI.
13743	Fouser, Jno.....	Jacks, supporting.....	Nov. 13, 1855.....	XII.
12818	Fox, D. H., and John Fink.....	Ventilators, railroad-car.....	May 8, 1855.....	V.
13817	Fox, Jacob. (See Gartley, J. C., and Jacob Fox.) Fraissinet, E. P., and H. E. Reboul	Holders, ticket.....	Nov. 20, 1855.....	XXII.
13872	Franklin, Mills. (See Pepper, John, assignor.)	Wagons, military.....	Dec. 4, 1855.....	X.
13247	Francis, Joseph.....	Windmill, self-regulating.....	July 10, 1855.....	XI.
13256	Frantz, Benjamin, assignor to John Phillips.....	Vises, adjustable.....	July 17, 1855.....	II.
13730	Frazer, John, assignor to Logan, Vail, & Co.....	Knitting-machines.....	Nov. 6, 1855.....	III.
13065	French, A.....	Hinges, &c., springs for.....	June 19, 1855.....	II.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13002	French, Franklin J.	Boot jack.	June 5, 1855.	XXI.
12276	Frost, Henry A.	Window blinds, means for holding.	Jan. 23, 1855.	II.
12588	Frost, Henry A.	Table-leaves, mode of supporting.	Mar. 28, 1855.	XVII.
392	Frost, J., and James Monroe.	Flour, machine for separating from bran.	Mar. 14, 1855.	Reissue.
12423	Frost, Samuel W.	Coal-holes, safety-port for.	April 4, 1855.	IX.
13395	Fulghum, Benjamin.	Sawing-machine.	July 24, 1855.	XIV.
13677	Fuller, Albert.	Faucet.	Oct. 16, 1855.	XI.
13 148	Furston, A. C.	Scaffold.	June 19, 1855.	IX.
738	Fulton, Calvin, assignor to McClure, Bedell, & Barry	Stove-plates.	Oct. 30, 1855.	Design.
13167	Fultz, H. H.	Horse-power.	July 3, 1855.	XIII.
13426	Fultz, H. H.	Presses, cotton.	Aug. 14, 1855.	XII.
13641	Fultz, H. H.	Gins, cotton.	Oct. 9, 1855.	XII.
12336	Fuzzard, William.	Hat bodies, machinery for felting.	Feb. 13, 1855.	III.
314	Fuzzard, William.	Hat-bodies, machine for felting.	July 10, 1855.	Reissue.
13904	Gallaher, John S., jr. (See Smith, John W.)	Gas apparatus.	Dec. 11, 1855.	V.
12724	Gallaher, John S., jr., and John W. Smith.	Music box, apparatus for turning the leaves of.	April 18, 1855.	XVIII.
13359	Gallup, Isaac.	Telegraph wires, apparatus for discharging atmospheric electricity from.	Aug. 7, 1855.	VIII.
12469	Gambrell, Horatio N., and Singleton F. Burges.	Carding machines.	Feb. 23, 1855.	III.
13258	Gamble, J. K. and W. P.	Bridges, draw, railroad.	July 17, 1855.	IX.
12589	Ganse, Harvey D.	Cultivators.	Mar. 28, 1855.	I.
13905	Gardiner, P. G.	Springs, railroad car.	Dec. 11, 1855.	X.
13645	Gardner, Samuel, jr.	Amalgamator.	Oct. 9, 1855.	II.
752	Gardner, Joseph W., assignor to Lamson, Goodnow, & Co.	Knives and forks.	Dec. 25, 1855.	Design.
696	Gardner, Joseph W.	Forks, table.	Mar. 20, 1855.	Design.
12613	Gardner, Smith, assignor to American White Zinc Company, assignor to Charles T. Pearson, assignor to Edward Kellogg.	Zinc, white, manufacture of.	Mar. 23, 1855.	IV.
	Gardner, William H. (See Pearson, Samuel, jr., & Gardner.)			





## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13720	Griffiths, Robert	Nut-machine	Oct. 30, 1855	II.
335	Grimes, William C	Spark-arresters	Dec. 25, 1855	Release.
12313	Griswold, Hezekiah	Shirts, yoke of	Jan. 30, 1855	XXI.
12739	Griswold, Martin R	Metal-tubes, arrangement of rollers for making	April 18, 1855	II.
12591	Groat, Warner	Journal-boxes, packing	Mar. 28, 1855	X.
12276	Groobl, Louis Francis	Marquetry	Jan. 23, 1855	XIV.
12426	Groom, Smith	Hose coupling	April 4, 1855	XI.
12906	Gross, Henry	Fire-arms	May 22, 1855	XIX.
12905	Gross, Henry	Bedstead-rails, machine for cutting screws on	May 22, 1855	XVII.
13060	Grout, Jonathan	Press, cotton, self-acting	June 13, 1855	XII.
13570	Grover, William	Wire, cutting	Sept. 18, 1855	II.
13307	Guard, Chauncey H., assignor to J. A. Scroggs and C. H. Guard.	Huba, machine for boring and mortising	July 24, 1855	X.
333	Guild, Joseph	Mortising-machine	Dec. 11, 1855	Release.
12592	Guild, Wm. H., and Wm. F. Garrison	Valves, operating, in direct-acting steam-engines	Mar. 28, 1855	VI.
12513	Guivitz, William H	Sleighs	Mar. 14, 1855	X.
13933	Haggard, J., and George Bull, assignors to Bull, Haggard, & Newteter.	Harvester rakers	Dec. 11, 1855	I.
12387	Haggard, John W., and George Bull	Ploughs, rotary	Feb. 13, 1855	I.
12546	Haines, Joel	Tables, extension	Mar. 20, 1855	XVII.
12907	Haines, Jonathan	Harvesters, grain	May 22, 1855	I.
331	Haines, Jonathan	Harvesting-machines	Nov. 6, 1855	Release.
13523	Haines, Jonathan	Harvesters, grass	Sept. 4, 1855	I.
12351	Haldeman, Daniel	Burglars' alarm	Feb. 6, 1855	XXII.
12415	Haldeman, Daniel	Harrows	Feb. 20, 1855	I.
13751	Haldeman, Daniel	Washing-machines	Nov. 6, 1855	XVII.
13937	Hale, John P.	Salt apparatus for making	Dec. 25, 1855	IV.
13592	Haley, John J.	Dovetailing-machine	Dec. 4, 1855	XIV.
12315	Hall, Alexander	Plan-forges	Jan. 30, 1855	XVIII.
12414	Hall, Charles C.	Paper from resinous bark, preparation of	Feb. 20, 1855	IV.
12226	Hall, Hiram L., assignor to James C. Stimpson.	Leather, japanned, processes for making	Jan. 12, 1855	XVI.
	Hall, H. L. (See Hicks, Lucien E.)			

13595	Hall, Joshua E.	Coffee-pot.	Sept. 29, 1855.	XVII.
13702	Hall, J. An B.	Plumbing presses, apparatus for feeding paper to.	April 10, 1855.	XVIII.
13707	Hall, Thomas J.	Ploughs.	April 4, 1855.	I.
13791	Hall, Thomas J.	Ploughs.	May 1, 1855.	XIV.
13127	Hallett, Julius S. and C. J. Ackerman.	Ploughs, gang.	June 26, 1855.	XVIII.
13410	Halverson, H., assignor to Horace Barnes.	Daguerreotype cases, carpenter's.	Aug. 7, 1855.	IV.
12160	Hammer, Adolph.	Beer, fermenting-tuns for.	Jan. 6, 1855.	IV.
12215	Hammer, Adolph.	Mash-machines.	Jan. 12, 1855.	IV.
12204	Hammer, Adolph.	Hop-extracting apparatus.	Jan. 12, 1855.	IV.
12413	Hammer, Gustavus.	Pump-valves.	Feb. 20, 1855.	XI.
12628	Hammer, Gustavus.	Musical instruments, wind-valve for.	April 4, 1855.	XVIII.
124	Hamilton, James.	Quartz-crushing machines.	May 22, 1855.	Add'l imp't.
13-74	Hamilton, Samuel, jr.	Burglars' alarm.	Dec. 4, 1855.	IX.
13680	Hancock, Benjamin.	Excavators.	Oct. 16, 1855.	Design.
435	Hausbauer, John, and Henry Wass.	Stoves.	Feb. 28, 1855.	XXII.
12292	Hanley, James.	Bottles, devices for stoppers of.	Jan. 12, 1855.	XI.
12549	Hanson, Thomas.	Hydraulic rams, valve for.	Mar. 20, 1855.	Add'l imp't.
120	Hansen, E. W.	Pen-holders.	April 10, 1855.	
	Hanyan, J. H. (See Moore, E. N., and J. H. Hanyan.)			
13160	Hardeman, J. L.	Hemp-cutters.	Aug. 27, 1855.	I.
12820	Hardin & Stuber. (See Stuber & Hardin.)	Granite, &c., artificial, facing-beds for grinding.	May 8, 1855.	XV.
12819	Hardinge, Benjamin.	Silica, apparatus for dissolving.	May 8, 1855.	IV.
	Hargrave, John. (See Fairbairn & Hargrave.)			
13838	Harkness, G. C. (See Wardwell, B., et al.)	Envelopes.	Nov. 27, 1855.	XVIII.
12161	Harmon, Emanuel.	Buildings, iron, fire-proof.	Jan. 5, 1855.	IX.
12278	Hart, William H.	Mill for cutting and grinding vegetables.	Jan. 23, 1855.	XIII.
13985	Hartman, John, jr. (See Smith, Robert A.)	Millstones, mode of dressing, for scouring and hulling buckwheat, &c.	Dec. 25, 1855.	XIII.
691	Harris, C. and P. W. Zolner.	Stoves, coal.	Jan. 23, 1855.	Design.
13128	Harris, Charles S.	Valve, balance.	June 26, 1855.	Design.
743	Harris, Conrad, and Paul Wm. Zolner.	Stoves, cooking.	Dec. 11, 1855.	Design.
748	Harris, Conrad, and Paul Wm. Zolner.	Stoves, box, six-plate.	Dec. 11, 1855.	Design.
747	Harris, Conrad, and Paul Wm. Zolner.	Stoves, parlor, to burn coal.	Dec. 11, 1855.	Design.
745	Harris, Conrad, and Paul Wm. Zolner.	Stoves, parlor, to burn wood.	Dec. 11, 1855.	Design.

## Alphabetical List of Patentes—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
724	Harris, Conrad, and Paul Wm. Zolner, assigns to A. Bradley.	Stoves, cooking.....	Aug. 22, 1855.....	Design.
12503	Harris, David S.	Looms.....	Mar. 28, 1855.....	III.
12550	Harris, Elbridge	Lamps.....	Mar. 20, 1855.....	V.
13575	Harris, Horace	Plane-bit.....	Sept. 18, 1855.....	XIV.
13304	Harris, J. & E.	Stamp, hand.....	July 24, 1855.....	XVIII.
12131	Harris, James B.	Chair, railroad, machines.....	Jan. 5, 1855.....	IX.
13904	Harris, John K.	Hay, machine for raking and loading.....	Dec. 11, 1855.....	I.
13309	Harris, John.....	Rope, machinery for making.....	July 24, 1855.....	III.
13752	Harris, John.....	Mules, self-acting.....	Nov. 6, 1855.....	III.
12759	Harris, Norman C.....	Pencils, slate, manufacture of.....	April 24, 1855.....	XXII.
	Harris, N. M., et al. (See Hooker, Thomas, and W. D. Beaumont, assignors.)			
	Harris & Tiffany. (See Tiffany, J., and M. Har- rie.)			
13352	Hartison, James, Jr.	Vault-covers.....	July 31, 1855.....	IX.
13353	Harrison, James, Jr.	Sewing-machines.....	July 31, 1855.....	III.
13616	Harrison, James, Jr.	Sewing-machines.....	Oct. 2, 1855.....	III.
12790	Harsen, Cornelius L., and Moses E. Bralley	Gates, farm.....	May 1, 1855.....	IX.
13703	Harsba, Thomas.....	Printing-press, card.....	Oct. 23, 1855.....	XVIII.
13168	Harsbman, Jacob.....	Boilers, steam.....	July 3, 1855.....	VI.
12861	Hart, Francis P.	Lumber, gauge for slitting.....	May 15, 1855.....	XIV.
12574	Hartley, W. M. B.	Press for making cylindro-conical hollow projectiles by pressure.	Mar. 20, 1855.....	XIX.
	Hartshorn, John. (See Chamberlain, Dexter H.)			
12631	Hartshorn, John, and Dexter H. Chamberlain, as- signors to John Hartshorn.	Curtain-rollers, fixtures for.....	April 4, 1855.....	XVII.
12792	Hartshorn, John and Jacob.	Curtaines, spring-rollers for.....	May 1, 1855.....	XVII.
12907	Hartshorn, S. S.	Buckles.....	Dec. 11, 1855.....	II.
13218	Hartshorn, Sheldon S.	Buckles.....	July 10, 1855.....	II.
13169	Hartwell, Isaac B.	Cutting cavities, spherical, ellipsoidal, &c., ma- chine for.	Nov. 2, 1855.....	XIV.

129467	Hedlam, Joseph, by his heirs, John and James Hiram	Thread, covering with wool or silk.....	Feb. 20, 1855.....	XIV.
29416	Hastings, Joel, James Ramsey, and H. G. Chamberlain.	Tenons, machines for cutting.....	Feb. 20, 1855.....	XVI.
12128	Hatch, Jesse W., and Henry Churchill.....	Boot and shoe soles, machines for cutting out.....	Jan. 5, 1855.....	XVI.
33875	Hatch, Jesse W.....	Boot and shoe soles, cutting out, machine for.....	Dec. 4, 1855.....	XIV.
12206	Hatcher, J. W.....	Slingto, rotary, machine.....	Jan. 12, 1855.....	VI.
13786	Hathaway, John H.....	Engines, rotary.....	Nov. 13, 1855.....	XVIII.
12255	Hawes, J. J. (See Southworth, A. S., and J. J. Hawes.)	Paper, boxes of, machine for making.....	Jan. 17, 1855.....	VIII.
12771	Hawes, R. L., assignor to Robert Rennie.....	Lawn, machines for dressing.....	April 24, 1855.....	VIII.
13129	Hawkes, Charles W., and George P. Reed.....	Time-keepers, compensation balances for.....	Jan. 5, 1855.....	X.
12455	Hawley, Niram.....	Hubs, &c., mandrel for holding carriage.....	Feb. 23, 1855.....	VI.
	Hay, C. D., et al. (See Huffman, Samuel, assignor.)	Engines, locomotive, variable exhaust of.....	Oct. 9, 1855.....	Design.
13648	Hay, Samuel L.....	Daguerreotype and other mats, ornamenting.....	Oct. 9, 1855.....	Design.
733	Hayden, Hiram W.....	Carriage-tops, apparatus for setting bows for.....	July 3, 1855.....	II.
13171	Hayes, E. & M.....	Ovens.....	July 31, 1855.....	III.
13375	Hayes, John P.....	Lamp, lard.....	July 3, 1855.....	III.
13170	Hayes, James D.....	Drilling and screw-cutting machine.....	Nov. 27, 1855.....	II.
13845	Heacock, Joel P.....	Cooper's tool.....	Nov. 27, 1855.....	III.
13816	Heacock, Joel P.....	Fabrics, woven.....	Dec. 18, 1855.....	III.
13970	Healey, John, assignor to James Bishop.....	Pumps, ship.....	July 10, 1855.....	Design.
13219	Heard, John J.....	Harvesting-machines.....	Sept. 12, 1855.....	Design.
13545	Heath, John E.....	Spoons.....	July 3, 1855.....	III.
715	Hebbard, Henry, and John Polhamus.....	Thread, sewing and dressing.....	May 15, 1855.....	X.
12685	Heck, John M., assignor to Henry Terry.....	Car, railroad, coupling.....	July 23, 1855.....	X.
13264	Hectrotte, Aaron G.....	Hub and axle fastening.....	May 30, 1855.....	XVIII.
	Helm, John. (See Tyer, Henry G., & Helm.)	Printing yarns and cloths, machine for.....	Nov. 20, 1855.....	XVIII.
12946	Henderson, John.....	Kills, lime.....	Aug. 28, 1855.....	XXII.
13818	Henderson, Thomas.....	Burglars' alarm.....	Dec. 4, 1855.....	IX.
13494	Herr, Daniel (Pequesa).....	Bridges.....	Aug. 21, 1855.....	XVII.
13876	Hervey, H. L.....	Bedsteads.....	June 13, 1855.....	X.
13461	Hervey, H. L., and R. E. Osborn.....	Springs, pneumatic.....	July 16, 1855.....	X.
13984	Hez, Florian.....	Clover-buller.....	Jan. 30, 1855.....	I.
13248	Heyward, James F., assignor to the Delaware Air Spring Manufacturing Company.....			
9314	Hibbs, Jonathan.....			

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13339	Hickok, W. O.	Mill for grinding apples.	Nov. 20, 1855.	XIII.
12937	Hicks, L. E., assignor to himself and George N. Davis.	Hose-couplings.	May 22, 1855.	XI.
12986	Hicks, L. E., assignor to L. E. Hicks and H. L. Hall	Trusses, hernial, pads for.	May 30, 1855.	XX.
12182	Hicks, William	Brush, paint.	Jan. 6, 1855.	XVII.
12207	Hicks, William C.	Valve, slide, and exhaust passages, arrangement of, in steam-engines.	Jan. 12, 1855.	VI.
13932	Higfield, Amos D., assignor to himself and W. H. Harrison	Saw, circular, method of adjusting obliquely to their shafts.	Dec. 11, 1855.	XIV.
13050	Hildreth, George W.	Bells, mode of hanging.	June 19, 1855.	XXII.
13948	Hill, Benjamin	Paddle wheels.	Dec. 25, 1855.	VII.
13003	Hill, Luther	Boot and shoe counters, machine for shiving.	June 5, 1855.	XVI.
13090	Hill, Orris C.	Doors.	June 19, 1855.	IX.
13754	Hill, Stephen, and W. J. Wood	Gas-holders.	Nov. 6, 1855.	IV.
13909	Hill, Samuel L. (See Swift, Anson A., assignor.)	B-bateads.	Dec. 11, 1855.	XVII.
12338	Hinkley, Benjamin	Doors, weather-strips for.	Feb. 13, 1855.	IX.
13226	Hite, J., assignor to W. F. Pagett.	Harvesters.	July 10, 1855.	I.
12509	Hoard, J. W.	Gas-regulators.	Mar. 14, 1855.	V.
12551	Hoard & Curtis. (See Curtis, J., and S. Hoard.)	Augers, &c, ship.	Mar. 20, 1855.	XIV.
12449	Hongland, Isaac W.	Treenail machine.	May 22, 1855.	VII.
12316	Hongland, J. W.	Ship-carpenters' rainstaff, screws for.	Jan. 30, 1855.	VII.
715	Hobbs, John	Water-coolers.	May 22, 1855.	Design.
13116	Hodgetts, George, assignor to Robert L. Wright.	Stone, artificial, manufacture of.	June 19, 1855.	XV.
13175	Hoe, R., & Co. (See McDonald, Wm., assignor.)	Rivets, machines for making.	July 3, 1855.	II.
13721	Hoffman, Frederick, & Ch. W. G. Fordan.	Engines, steam, surface-condensers for.	Oct. 30, 1855.	VI.
12793	Hollen, Warren.	Boot and shoe stretchers.	May 1, 1855.	XVI.
12945	Holland, Homer.	Processes for treating auriferous and argentiferous sulphurets.	May 30, 1855.	IV.

12050	Holley, Joseph	Faneet, fluid	May 30, 1855.	XI.
12052	Holliday, Lorton	Mitre and bevelling machine	May 15, 1855.	XIV.
12470	Hollingsworth, Jehu, and Ralph S. Mershon.	Fire arms	Feb. 28, 1855.	XIX.
12471	Hollingsworth, Jehu, and Ralph S. Mershon	Fire-arms, repeating.	Feb. 28, 1855.	XIX.
13172	Holly, Birdsell	Wheels, turbine, method of regulating the issue ap- ertures and of suspending.	July 3, 1855.	XI.
12350	Holly, B. (See Race, W., and B. Holly.)	Pumps, elliptical rotary.	Feb. 6, 1855.	XI.
13262	Holmes, John B., assignor to J. R. Pratt.	Ships' capatans	July 28, 1855.	VII.
13612	Holmes, John B., assignor to Jno. R. Pratt and Jno. B. Holmes.	Ships' windlasses.	Sept 25, 1855.	VII.
13722	Holmes, R. G., and Wm. H. Butler.	Locks	Oct. 30, 1855.	II.
12594	Holmes, R. G., and Wm. H. Butler.	Fire-proof safes.	Mar. 28, 1855.	II.
12130	Holstrom, Alexander	Pile-driving, apparatus for atmospheric	Jan. 5, 1855.	IX.
13495	Holt, Horace	Stamp, hand	Aug. 28, 1855.	XVIII.
12347	Hulton, John. (See Phelps, Orson C., assignor ) Holzer, J., et al. (See Smith, G., et al., assignors.) Homan, Muhle, & Ackerman. (See Ackerman, as- signor.)	Fuel, artificial.	May 10, 1855.	V.
13546	Hooker, Thomas, and Wm. D. Beaumont, assign- ors to A. A. Pray, N. M. Harris, E. C. Lemoyne, J. R. Jennings, G. G. and L. A. Kirk.	Life-preserving beds for ships.	Sept. 12, 1855.	VII.
13462	Hooper, George K.	Printers' calico rollers, machine for engraving	Aug. 21, 1855.	XVIII.
13005	Hope, John and Thomas	Hats, process of manufacturing	June 5, 1855.	III.
12725	Hopkins, Lansing E.	Button, stud and, fastening.	April 18, 1855.	XXI.
12234	Hopkins, Samuel H., assignor to Wm. C. Greene, Jno. T. Mauran, and Chas. Jackson.	Plane, bench	Jan. 17, 1855.	XIV.
12359	Horn, Geo. H. and Benj. H.	Sewing-machines	Feb. 13, 1855.	III.
13729	Horsford, E. N. and J. R. Nichols	Lamps, for burning volatile liquids	Oct. 30, 1855.	V.
12908	Horton, Chas B	Hullers of buckwheat	May 22, 1855.	I.
13767	Horton, Eli	Lathe-chuck	Nov. 13, 1855.	XIV.
13946	Horton, H. B	Music, registering, machine for	Dec. 18, 1855.	XVIII.
12794	Horton, Hosea B	Boot-clipping machine	May 1, 1855.	XVI.
739	Horton, James, assignor to Liebrandt, McDowell, & Co.	Stoves, coal	Oct. 30, 1855.	Design.
13673	Hotchkiss, A.	Bench-book	Oct. 16, 1855.	XIV.
13679	Hotchkiss, Andrew	Ordnance, projectiles for	Oct 16, 1855.	XIX.
12552	Hotchkiss, Gideon	Brakes, railroad car.	Mar. 20, 1855.	X.

*Alphabetical List of Patentes—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class
13310	Hotchkiss, Horace	Files, machines for cutting.	July 24, 1855.	II.
13129	Hough, A. V.	Brick-machines	June 26, 1855.	XV.
12629	Houghton, Luther.	Cannon, rifled, mode of loading.	April 4, 1855.	XIX.
13263	House, J. Carroll.	Bedsteads, alarm	July 17, 1855.	XVII.
12291	Hover, Lewis	Landrens	Jan. 23, 1855.	V.
13173	Hovey, Wm. H.	Harvesters, grain and grass	July 3, 1855.	I.
12778	How, John	Wool, fleeces of, machine for bundling.	May 1, 1855.	XII.
12201	Howard, C. G. (See Chamberlain, D. H., as signor.)			
12901	Howard, D. S.	Dredging-machines	Jan. 12, 1855.	IX.
12949	Howard, D. S.	Water-wheel	May 30, 1855.	XI.
13573	Howard, Dean S.	Sawing-mill	Sept. 18, 1855.	XIV.
12863	Howard, Wm. H.	Fibrous materials, condensers for	May 15, 1855.	III.
13877	Howe, Abraham, and S. S. Grannis	Wire heddles, manufacture of.	Oct. 11, 1855.	Extension.
13877	Howe, George A.	Cotton pickers, hand	Dec. 4, 1855.	I.
13865	Howe, Tyler	Bedsteads	July 17, 1855.	XVII.
13819	Howell, Theodore P., and Noah F. Blanchard	Leather for enamelling, treating.	Nov. 20, 1855.	XVI.
12390	Hoves, Frederick	Ships' standing rigging.	Feb. 13, 1855.	VII.
12795	Hoyt, Eben, Jr.	Projectile for fire-arms.	May 1, 1855.	XIX.
12203	Hoyt & Oliver (See Oliver, R. W.)			
13788	Hubbard, Geo. W., and Wm. E. Conant.	Valves, slide, operating, in direct-action engines.	Jan. 12, 1855.	VI.
13788	Hubbard, Geo. W.	Marble-sawing machine.	Nov. 13, 1855.	XV.
12434	Hubbard, Guy H.	Auger-handle, fastening	Mar. 7, 1855.	II.
12162	Hubbard, M. G.	Planing-machine, mode of hanging the knife in.	Jan. 5, 1855.	XIV.
12910	Hubbard, M. G.	Springs, carriage	May 22, 1855.	X.
12890	Hubbard, M. G.	Springs for carriages	May 15, 1855.	X.
13004	Hubbard, M. G.	Harvesters, grain and grass	June 5, 1855.	I.
13174	Hubbard, M. G.	Plane-stocks and their mouth-pieces, mode of hanging.	July 3, 1855.	XIV.
13311	Hubbard, M. G.	Carriages.	July 24, 1855.	X.
12947	Hubbell, W. W., and D. Matthew.	Engines, vapor.	May 30, 1855.	VI.

1890S	Huffman, Samuel, assignor to S. Huffman and D. O'Hara.	Cannon, repeating .....	Jan. 23, 1855.....	IX.
12886	Huffman, Samuel, assignor to S. Huffman and C. D. Hay.	Votes in legislative bodies, mode of indicating the number of the yea and nay balls in machines for taking.	May 15, 1855.....	XXII.
13574	Hughes, Amos P.....	Dovetail key cutter.....	Sept. 18, 1855.....	XIV.
12456	Hughes, D. W.....	Hemp-breaker .....	Feb. 28, 1855.....	III.
13920	Hughes, D. W.....	Planters, seed, hand.....	Nov. 20, 1855.....	I.
13354	Hull, Liveras.....	Sawing ratan, machines for.....	July 31, 1855.....	XIV.
13391	Hull, Liveras.....	Braiding-machines.....	Aug. 7, 1855.....	III.
13719	Hull, Liveras.....	Braiding, machinery for.....	Oct. 30, 1855.....	III.
13147	Hull, Stephen.....	Harvesters, attaching the raker's seat to.....	June 26, 1855.....	I.
13334	Humel, Peter H. (See Stockstill, Stephen L.)	Candle-mould apparatus.....	July 24, 1855.....	IV.
13753	Humilton, Willis.....	Locks.....	Nov. 6, 1855.....	II.
12349	Humphrey, D. W. G.....	Flour-bolts, wire-cloth.....	Feb. 6, 1855.....	XIII.
13704	Hunt, F. B., and E. Nodyke.....	Melodeons .....	Oct. 23, 1855.....	XVIII.
	Hunt, George G.....			
	Hunt, Nehemiah. (See Neilson, George, assignor.)			
	Hunt, Nehemiah. (See Taggart, John, assignor.)			
	Hunter & O'Neill. (See O'Neill, Andrew, assignor.)			
13739	Hunter, John E., assignor to S. R. Bialr.....	Gas-bracket.....	Oct. 30, 1855.....	III.
13936	Hurd, Reuben.....	Seeding-machines.....	Dec. 25, 1855.....	I.
13618	Hurlbut, S. C. and W. W.....	Planing-machines, &c., feed-motion for.....	Oct. 2, 1855.....	XIV.
13969	Hurlbut, W. W.....	Saws, circular, method of hanging.....	Dec. 25, 1855.....	XIV.
12779	Hurt, James B.....	Wheel, eccentric, mode of applying to water-power.....	May 1, 1855.....	XI.
12951	Hutchins, Parley.....	Trucks, hand.....	Jan. 17, 1855.....	X.
12679	Hutchinson, Charles B.....	Saws, grinding, reciprocating.....	April 10, 1855.....	XIV.
12595	Hyatt, Thaddeus.....	Vault-cover, illuminating.....	Mar. 28, 1855.....	IX.
303	Hyatt, Thaddeus.....	Vault-overs .....	April 4, 1855.....	Release.
12951	Hyde, Edward G.....	Ear-trumpets, construction of.....	May 30, 1855.....	XX.
12510	Hyde, Joseph.....	Screw-wrenches.....	Mar. 14, 1855.....	II.
13463	Hyde, Joseph.....	Vessels, apparatus for, to indicate their locality when they sink, and to supply a means of raising them.....	Aug. 23, 1855.....	VII.
13617	Hyde, Joseph.....	Wrenches, screw.....	Oct. 2, 1855.....	II.
12495	Hyde, Marcus F.....	Soda-water apparatus.....	Mar. 7, 1855.....	IV.
12163	Imel, John.....	Cultivators.....	Jan. 5, 1855.....	I.
12981	Ingersoll, Simon.....	Sawing or felling trees, machine for.....	May 8, 1855.....	XIV.



*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12596	Irish, William S.	Looms.	Mar. 28, 1855	III.
13392	Irwin, John L.	Tires upon wheels, mode of securing.	Aug. 7, 1855	II.
1279	Ives, William	Book-brace.	Jan. 23, 1855	XVIII.
13220	Jackman, Enoch, and Edwin G. Dunham.	Carpets, fastenings for.	July 10, 1855	XVII.
13335	Jackman, Solon S.	Iron, machines for compressing puddlers' balls, and other masses of.	July 31, 1855	II.
13393	Jackson, Greene, & Mauran. (See Hopkins, Samuel H., assignor.)			
13393	Jackson, Peter H.	Ships' winches.	Aug. 7, 1855	VII.
13347	Jackson, Peter H.	Anchor stoppers, cat-head.	Nov. 27, 1855	VII.
13006	Jackson, Wm. R.	Vessels, steam and other, floating-cabins for.	June 5, 1855	VII.
	Jacobs & Fowler. (See Fowler, M. H., and E. Jacobs)			
13321	Jacobs, Lyman, and E. C. Landon.	Carriages, mode of attaching tops to seats of.	Nov. 20, 1855	X.
13476	James, A., <i>et al.</i> (See Messer, D. W., assignor.)			
13476	James, Daniel S., assignor to himself, J. B. White, and J. W. McIntyre.	Mills, corn and cob.	Aug. 21, 1855	XIII.
13266	Jeannota, Jules.	Bottle fastenings.	July 17, 1855	XXII.
13464	Jeffers, Ebenezer.	Car, railroad, seats.	Aug. 21, 1855	X.
13007	Jeffery, Edwin A.	Pump, double-acting.	June 5, 1855	XI.
312	Jenks, B. H.	Looms.	June 5, 1855	Reissue.
12630	Jenks, B. H.	Looms.	April 4, 1855	III.
13312	Jenne, John.	Stalls for horses.	July 24, 1855	XXII.
	Jennings, J. R., <i>et al.</i> (See Hooker, Thomas, and W. D. Beaumont, assignors.)			
12318	Jennings, R.	Augers.	Jan. 30, 1855	XIV.
12910	Jewett, F. A.	Lamps, extinguishers to, mode of attaching.	Dec. 11, 1855	V.
13650	Jillson, J. A., and H. Winfield.	Fibrous and textile substances, apparatus for washing and bleaching.	Oct. 9, 1855	III.
13848	Jillson, L. B., and G. Sparhawk.	Looms, bag.	Nov. 27, 1855	III.
307	Johnson, A. Livingston.	Shutters, rolling iron, hinges of.	April 24, 1855	Reissue.
13130	Johnson, Charles H.	Gas-burners.	June 26, 1855	V.

13760	Johnson, Charles H.	Gas-burners, Argand.	Nov. 13, 1855.	V.
13761	Johnson, Frank G.	Wind-mill, self-regulating.	Jan. 12, 1855.	XI.
13762	Johnson, J., and J. E. Crane.	Stoves, &c.	April 24, 1855.	V.
13681	Johnson, Jasper.	Vices.	Oct. 16, 1855.	II.
13649	Johnson, Job.	Fish-hook.	Oct. 9, 1855.	XXII.
13356	Johnson, John, and C. Tompkins.	Washing-machines.	July 31, 1855.	XVII.
13357	Johnson, Josee.	Fire-arms, charger for.	Sept. 12, 1855.	XIX.
13847	Johnson, Wm W.	Planing felloses, machine for.	Dec. 18, 1855.	XIV.
13912	Johnson, Cox, Lislely, & Co., assignors. (See Ripley and Vedder, assignors.)			
13913	Johnson & Cleveland. (See Cleveland, N., and J. J. Johnston.)			
13911	Johnston, James J.	Corn-shellers.	Dec. 11, 1855.	I.
13946	Jones, Eber.	Casting bells, moulds for.	Dec. 18, 1855.	II.
13913	Jones, Gilbert D.	Sand-paper making machine.	Dec. 11, 1855.	XXII.
13911	Jones, Henry C.	Locks for freight cars.	Dec. 11, 1855.	II.
12690	Jones, J. H. (See Randall, S. G., and J. H. Jones.)			
12280	Jones, James H.	Car, railroad, coupling.	April 10, 1855.	X.
13431	Jones, Samuel G.	Jacks, lifting.	Jan. 23, 1855.	XII.
13332	Jones, Samuel T.	Zinc, white, making.	Aug. 14, 1855.	IV.
127	Jones, Samuel T.	Furnaces for treating zinc ores.	July 24, 1855.	V.
12752	Jones, Wm. D., assignor to Henry Winfield.	Propellers.	Aug. 21, 1855.	Add'l'nal improvement.
121	Jones, Wm. D., assignor to Henry Winfield.	Propellers.	April 18, 1855.	VII.
13921	Jordan, E. (See Cate, S. M.)	Saddle-trees.	April 18, 1855.	Add'l'nal improvement.
13496	Joslyn, Benj. F.	Wrenches, slide.	July 10, 1855.	II.
13507	Joslyn, Benj. F.	Scythe-fastening.	Aug. 28, 1855.	I.
12631	Joslyn, Benj. F.	Fire-arms, breech-loading.	Aug. 28, 1855.	XIX.
12552	Judd, Charles G., and Andrew Oliver. (See Ketcham, Charles, assignor.)	Pumps, double-acting.	April 4, 1855.	XI.
13682	Judd, O. B.	Harvesters, grain and grass.	Jan. 17, 1855.	I.
12148	Keoch, Joseph.	Wash-basins.	Oct. 16, 1855.	XVII.
13357	Keeler, Rufus, assignor to Lewis C. England.	Tapping processes.	Jan. 5, 1855.	XVI.
	Keeney, F. H.	Saw, circular, mandrel.	July 31, 1855.	XIV.

## Alphabetical List of Patentes—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12632	Keeney, Wm. J., and James R. Tarbox.	Rakes and hay-elevators.	April 4, 1855.	I.
12132	Keith, Asa P.	Gins, cotton.	Jan. 5, 1855.	III.
12411	Keith, John S., and John Brooks.	Bullet-mould.	Feb. 20, 1855.	XIX.
13578	Keller, Mathias.	Violins, machine for cutting the fronts and backs of.	Dec. 4, 1855.	XVIII.
13577	Kellogg, Edward. (See Gardner, Smith, assignor.)	Lanterns for locomotives.	Sept. 18, 1855.	V.
13313	Kelly, James H.	Chairs, railway, machines for making.	July 24, 1855.	IX.
13267	Kelren, James, assignor to himself and Geo. Banks.	Thread, sewing, trebling a single strand and twisting.	July 17, 1855.	III.
12183	Kelsea, Harold.	Printing-press.	Jan. 6, 1855.	XVIII.
12553	Kelney, Sidney.	Press for printing, hand.	Mar. 20, 1855.	XVIII.
13035	Keniston, Charles.	Staves, machine for planing.	June 13, 1855.	XIV.
13035	Kennedy, M. T.	Staves, jointing, machine for.	June 13, 1855.	XIV.
13036	Kennedy, M. T.	Stoves, parlor.	July 24, 1855.	V.
13314	Kenn-y, Francis.	Amalgamators.	Dec. 4, 1855.	II.
13579	Kent, Edw. N.	Piano-forte action.	Dec. 4, 1855.	XVIII.
13091	Kerrieon, Robt. M.	Locks.	Dec. 4, 1855.	II.
13580	Kernhaw, Edw.	Sawing shingles, machine for.	Aug. 21, 1855.	XIV.
13475	Ketcham, Charles, assignor to Chas. G. Judd and Andrew Oliver.	Cars, mechanism for retaining, upon the track.	Feb. 6, 1855.	X.
12371	Ketcham, Geo. P.	Saws, reciprocating, method of driving pairs of.	Feb. 20, 1855.	XIV.
12412	Ketcham, Geo. P.	Slate, machines for cutting and trimming.	Jan. 5, 1855.	XV.
12164	Keyes, Asa.	Roads, machine for repairing.	Feb. 6, 1855.	IX.
12352	Kimball, Alpheus.	Marble-sawing machine.	Nov. 13, 1855.	XV.
13791	Kimball, Wm. B.	Boring hubs to receive boxes, tool for.	Mar. 28, 1855.	XIV.
12598	Kimble, Urias.	Mills, cider.	May 30, 1855.	XIII.
12963	Kindleberger, Tobias J.	Pressing tobacco in plugs.	June 13, 1855.	XII.
13061	King, George.	Bridges, swing.	May 30, 1855.	IX.
12952	King, John N.	Presses, tobacco.	Nov. 13, 1855.	XII.
13790	Kinsley, R.	Grate-bar.	Mar. 28, 1855.	V.
12597	Kirk, G. G. and L. A., et al. (See Hooker, Thos., and Wm. D. Beaumont, assignors.)			
12597	Kirk, Jos. S., and Wm. H. Elliot.			

19458	Kirkwood, Alexander	Vessels, method of pumping water out of	Feb. 28, 1855	VII.
13199	Kite, John L.	Furnace, hot-air	June 10, 1855	V.
13578	Kiteon, Richard	Fibrous materials, machinery for picking	Sept. 18, 1855	III.
13550	Kleemann, Joseph	Umbrella sticks, &c., of ratan, preparation of	Nov. 27, 1855	XXI.
12631	Klein, Ferdinand	Fire-arms	April 10, 1855	XIX.
12340	Kline, John C.	Locks, door, latch	Jan. 17, 1855	II.
13037	Kline, John C.	Locks, door	June 13, 1855	II.
12864	Knapp, Thomas J.	Tensioning tool, adjustable	May 15, 1855	XIV.
12599	Knight, Samuel B.	Chalking lines, method of	Mar. 23, 1855	XXII.
12134	Knowles, Hazard	Tonguing and grooving, cutters for	Jan. 5, 1855	XIV.
12536	Knox, Samuel A., assignor to Ruggies, Nourse, Mason, & Co.	Cultivators	Mar. 14, 1855	I.
12511	Koch, Louis	Boxes, paper, machine for making	Mar. 14, 1855	XXII.
13412	Koch, Louis, assignor to Peter B. Sweeney and Michael Lacour	Paper pulp, machinery for making	Aug. 7, 1855	III.
12149	Koch, Louis, assignor to Theodore Pincus	Boxes, wooden, manufacturing	Jan. 5, 1855	XIV.
13949	Krake, John A.	Winnowing machines, mode of hanging the screens of	Nov. 27, 1855	I.
13741	Krauser, Samuel	Mills, cider or wine	Oct. 30, 1855	XIII.
13792	Krauser, S., and C. Ritter	Meier, water	Nov. 13, 1855	XI.
12911	Krebs, Isaac	Whistle-trees	May 22, 1855	X.
12133	Kroehl, Julius H.	Flanges on wrought-iron beams, machines for forming	Jan. 5, 1855	II.
13524	Kroger, A. E.	Harvesters	Sept. 4, 1855	I.
13851	Krupp, Alfred	Cannons	Nov. 27, 1855	XIX.
12956	La Bar, George W.	Mitre machine	May 30, 1855	XIV.
12683	Lackey, Walter	Straw-cutters	April 10, 1855	I.
12209	Lacour & Sweeney. (See Koch, Louis, assignor.)	Ovens, coke	Jan. 12, 1855	V.
13971	Lancaster, Joseph B., administrator of John K. Lancaster, deceased	Stoves, cooking	Dec. 18, 1855	V.
12760	Lancaster, Palmer	Shearing sheep, implement for	April 24, 1855	I.
13222	Lancaster, Wright	Washing-machines	July 10, 1855	XXVII.
12955	Landell, William	Propellers, buoyant	May 30, 1855	VII.
12459	Landphers, Ass., and S. Remington	Spoke-machine	Feb. 28, 1855	XIV.
	Landon, E. C. (See Jacobs, Lyman, and E. C. Landon.)			
13755	Lane, Horace	Saw horse	Nov. 6, 1855	XIV.
13727	Langdon, L. W.	Sewing-machines	Oct. 30, 1855	III.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13315	Larchar, Edwin B.	Boats, gutta percha, making	July 24, 1855.	VII.
12912	Latta, A. B.	Engines, steam fire, carriage for	May 22, 1855.	XI.
12682	Latta, A. B.	Steam generators	April 10, 1855.	VI.
12523	Lawrence, Henry	Bridge, ferry safety	Mar. 14, 1855.	IX.
	Lawrence & Abbott. (See Smith, G., et al., assignors.)			
	Lawrence & Abbott. (See Smith, Brown & Read, assignors.)			
13466	Lawton, Benjamin F.	Journal-box alloys	Aug. 21, 1855.	X.
13465	Lawton, Benjamin F.	Journal-box alloys	Aug. 21, 1855.	X.
12512	Leach, George.	Grain cleaner	Mar. 14, 1855.	XIII.
13721	Leach, James O.	Looms	Oct. 30, 1855.	III.
12460	Lear, Peter.	Paddle-wheels, submerged horizontal, method of arranging and operating.	Feb. 28, 1855.	VII.
12461	Leavitt, Charles.	Mills, portable grain.	Feb. 28, 1855.	XIII.
12600	Leavitt, Charles.	Shingle machine.	Mar. 28, 1855.	XIV.
13923	Leavitt, E. D., jr.	Valves, slide, for steam engines	Dec. 11, 1855.	VI.
12135	Lee, Wesley M.	Forging car-wheels, machines for	Jan. 5, 1855.	II.
13132	Leeds, Joseph	Furnaces for heating buildings	Aug. 14, 1855.	V.
13525	Leeds, Lewis M.	Furnaces, hot-air, apparatus to prevent an over-supply of coal to the fire-box of	Sept. 4, 1855.	V.
13467	Lefebvre, Louis H.	Batch, warm, apparatus	Aug. 21, 1855.	XX.
12265	Leighton, William, assignor to New England Glass Company.	Door-knobs.	Jan. 17, 1855.	II.
12136	Lemoulinier, Jean François.	Pavements, constructing	Jan. 5, 1855.	IX.
	Lemoyne, E. C., et al. (See Hooker, Thomas, and W. D. Beaumont, assignors.)			
12922	Lempeke, A.	Mill, wind, mode of checking	May 8, 1855.	XIII.
12954	Leverich, Gabriel	Books, paging, apparatus for	May 30, 1855.	XVIII.
12684	Lewis, Henry J. (See Crane, Ozro A.)	Carra. railroad, spiral wheel for replacing upon the track.	April 10, 1855.	X.
	Lewis, Robert F. R.			

726	Lewis, Thomas.	Trade marks.	Sept.	Design.
1217-5	Lewis, James.	Printing press.	4, 1855.	XVIII.
13512	Lewis, Jno. S.	Hoofs, supports of, made of outling the.	Jan. 5, 1855.	XVI.
13725	Lewis, W. L. B.	Ventilating railroad cars, method of.	Nov. 27, 1855.	V.
	Liebrandt, McDowell, & Co., assignees. (See Horton, assignor.)		Oct. 30, 1855.	
	Liebrandt, McDowell, & Co., assignees. (See Smith & Brown, assignors.)			
12990	Lighthouse, Alexander.	Meat, mincing, machines for.	Dec. 25, 1855.	XVII.
751	Litchin, A. A., Jr.	Stoves, ships' caboose.	Dec. 18, 1855.	Design.
13651	Lucola, William.	Wire di-b-covers, machine for making.	Oct. 9, 1855.	II.
13591	Lindey, H.	Pumps.	Dec. 4, 1855.	XI.
12001	Ling, Thomas.	Pump, self-adjustable or anchoring.	Mar. 28, 1855.	XI.
12523	Link, Henry.	Propeller.	May 8, 1855.	VII.
12780	Litchfield, Laruy.	Looms, shuttles for.	May 1, 1855.	III.
13176	Little, E. C., et al. (See Warren, George.)	Harvesters, attaching the connecting bar to the cutters of.	July 3, 1855.	I.
	Little, James, & Wylie.			
12761	Livingston, J. B., and Miles Waterhouse.	Printing-presses, machine for feeding paper to.	April 24, 1855.	XVIII.
12184	Locher, C.	Hoats, life, firding.	Jan. 6, 1855.	VII.
13652	Longacre, George M.	Steam, economizing.	Oct. 9, 1855.	VI.
13018	Loring, Harrison.	Bleaching rags, apparatus for.	June 5, 1855.	IV.
700	Lorton, William B.	Clock fronts.	May 1, 1855.	Design.
13177	Loudon, John, and Otto Ahlstrom.	Screw fastenings.	July 3, 1855.	II.
13009	Loughborough, William S.	Carpets, fastenings for.	June 5, 1855.	XVII.
13710	Loughborough, William S.	Types, composing and setting, machine for.	Oct. 23, 1855.	XVIII.
12686	Loughbridge, William.	Engine, stationary, hydro-pneumatic, for extinguishing fire.	April 10, 1855.	XI.
12685	Loughridge, William.	Brakes, car, graduating the tension of.	April 10, 1855.	X.
13692	Love, Charles.	Washing-machine.	Oct. 16, 1855.	XVII.
13915	Lovin, A., and R. Prince.	Printing, calico, processes for.	Dec. 11, 1855.	XVIII.
12913	Loveless, Charles B.	Stove, cook, air-brating.	May 22, 1855.	V.
13-87	Love, Samuel W., assignor to himself and Jacob M. Beck.	Printers, metallic plates for, preparation of.	Sept. 18, 1855.	XVIII.
12508	Ludington, H., and S. R. Lupton.	Lime-spreaders.	Mar. 14, 1855.	I.
13277	Ludwig, Matthew.	Saving down trees, machine for.	July 17, 1855.	XIV.
12914	Lum, Henry B.	Oates, farm.	May 22, 1855.	IX.
12-24	Lupton, T. N.	Harvesters, grain.	May 8, 1855.	I.
13596	Lupton, Thos. N.	Rakes for reaping-machines.	Sept. 25, 1855.	I.

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13726	Luther, Henry .....	Spinning-frames, ring, and traveller.....	Oct. 30, 1855.....	III.
13707	Luttgens, H. A. (See Uhry, H.) .....	Cans, sealing preserving.....	Oct. 23, 1855.....	XVII.
118	Lutz, Stimmel.....	Planters, seed.....	Feb. 6, 1855.....	Add'l imp't.
13316	Macfarlane, J. Graham.....	Processes for smelting iron.....	July 24, 1855.....	IV.
12165	Macferran, Samuel.....	Blasts, &c, machine for blowing.....	Jan. 5, 1855.....	XI.
12331	Mackenzie, P. W.....	Penmanship, method of teaching.....	Feb. 13, 1855.....	XVIII.
13705	MacLaurin, William S.....	Cars, railroad, safety-attachment in front of.....	Oct. 23, 1855.....	X.
315	Mahon, Charles.....	Planters, corn.....	July 10, 1855.....	Reissue.
12698	Malone, Samuel.....	Boring wells, machinery for.....	April 10, 1855.....	IX.
	Manahan, John F.....			
	Manchester Locomotive Works. (See Stone, J. M., assignor.) .....			
	Manchester Locomotive Works. (See Bayley, O. W., assignor.) .....			
714	Mann, Russell, assignor to Geo. W. Eddy.....	Stoves, cooking.....	July 3, 1855.....	Design.
286	Manny, John H.....	Harvesters, moving-machines and, (marked A.).....	Jan. 4, 1855.....	Reissue.
287	Manny, John H.....	Harvester-frames, arrangement of joints for attaching trucks to, (marked B)	Jan. 4, 1855.....	Reissue.
288	Manny, John H.....	Harvester-cutters, arrangements for controlling, (marked C.) .....	Jan. 4, 1855.....	Reissue.
289	Manny, John H.....	Harvesters having a leading-truck, (marked D.).....	Jan. 4, 1855.....	Reissue.
290	Manny, John H.....	Harvesters, triangular frame, construction of, (marked E.) .....	Jan. 4, 1855.....	Reissue.
292	Manny, John H.....	Harvesters, (marked F.).....	Jan. 4, 1855.....	Reissue.
291	Manny, John H.....	Harvesters, cutter-fingers of, (marked G.).....	Jan. 4, 1855.....	Reissue.
298	Manny, John H.....	Harvesters, grain and grass.....	Mar. 7, 1855.....	Reissue.
299	Manny, John H.....	Harvesters, grain and grass.....	Mar. 7, 1855.....	Reissue.
300	Manny, John H.....	Harvesters, grain.....	Mar. 7, 1855.....	Reissue.
12825	Manny, John H.....	Harvesters, grain and grass.....	May 8, 1855.....	Reissue.
13149	Manny, John H., (1).....	Harvesters, cutters of.....	June 26, 1855.....	I.
13150	Manny, John H., (1).....	Harvesters, guard-fingers of.....	June 26, 1855.....	I.
12409	Manny, John H., and Henry Marcellus.....	Harvesters, grain and grass.....	Mar. 7, 1855.....	I.

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13740	Manny, Felix.	Press, hay.	April 19, 1855.	xix.
13741	Mansfield, Martin H.	Clover-seed, hulling and cleaning.	Feb. 28, 1855.	I.
13781	Marble, Ezra P.	Looms, shuttles for.	May 1, 1855.	III.
13822	Marcellus, A. A.	Potato-digger.	Nov. 20, 1855.	I.
13916	Marcher, Robert J.	Mouldings, tool for grooving.	May 22, 1855.	xiv.
13917	Marcher, Robert J.	Mouldings, tool for grooving.	May 22, 1855.	xiv.
	Marcher, R. J., assignee. (See Barber, J. S., assignor.)			
13756	Marden, J., and H. A. Butters.	Leather, machines for splitting.	Nov. 6, 1855.	xvi.
13853	Marling, Leonard S.	Trunks, attaching castors to.	Nov. 27, 1855.	xxii.
13794	Markillie, Thomas R.	Planters, corn.	Nov. 13, 1855.	I.
13882	Markillie, Thomas R.	Spoke-machines.	Dec. 4, 1855.	xiv.
12142	Marland, Obadiah.	Paper-making, rolls and dryers for.	Feb. 28, 1855.	III.
12918	Marshall, Jacob.	Lubricating compounds.	May 22, 1855.	IV.
	Marshall & Rose. (See Ross & Marshall.)			
13093	Marston, Joseph H.	Stereoscopic photographs, apparatus for taking.	June 19, 1855.	xviii.
13581	Marton, William W.	Fire-arms.	Sept. 18, 1855.	xix.
13931	Martin, John S.	Curtains, mosquito.	Dec. 11, 1855.	xvii.
336	Martine, Charles F.	Bedsteads, sofa.	Dec. 25, 1855.	Reissue. V.
12486	Martz, George.	Coal-screen.	Mar. 7, 1855.	IX.
12633	Martz, George.	Cars, coal, apparatus for hoisting and dumping.	April 4, 1855.	xviii.
12257	Mascher, John F.	Medallion, stereoscopic.	Jan. 17, 1855.	V.
13596	Maskell, Thomas.	Furnaces, heating, consuming escape-steam as an adjunct in.	Sept. 4, 1855.	
	Mason, Nourse, Ruggles, & Co. (See Coburn, Francis S., assignor.)			
	Mason, Nourse, Ruggles, & Co. (See Knox, Saml. A., assignor.)			
	Mason, William H., et al. (See Rowland, Thomas F., et al.)			
	Massachusetts Arm Co. (See Stevens, Joshua, assignor.)			
328	Masey, John.	Bands, endless, for grain-dryers.	Sept. 12, 1855.	Reissue. VI.
12726	Mason, Abraham.	Engines, rotary.	April 18, 1855.	
	Mather, James D. (See Northrup, Joel G., assignor.)			
12634	Mathers, E., and W. D. Siegfried.	Printing-presses, hand, apparatus for feeding paper to.	April 4, 1855.	xviii.
13763	Matteson, E., and Walter M. and H. Farris.	Engines, steam, rotary.	Nov. 6, 1855.	VI.



*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
130	Mathew, David.....	Engines, locomotive, apparatus for heating feed-water to.	Dec. 11, 1855.....	Add'l imp't.
12915	Mathew, David.....	Spark-arresters.....	May 22, 1855.....	VI.
12965	Mathew, David.....	Spark-arresters.....	May 15, 1855.....	VI.
13270	Mathew, David.....	Engines, locomotive, apparatus for heating feed-water to.	July 17, 1855.....	VI.
	Matthew & Hubbell. (See Hubbell, W. W., and D. Matthew.)			
13469	Matthews, John, Jr.....	Gauges, pressure.....	Aug. 21, 1855.....	VI.
12514	Mauck, Robert C.....	Ditching machine.....	Mar. 14, 1855.....	IX.
	Mauran, Greene & Jackson. (See Hopkins, Samuel H., assignor.)			
12957	Maurer, William.....	Locks, door.....	May 30, 1855.....	II.
12639	Maxim, Samuel N.....	Apples, paring, machine for.....	April 10, 1855.....	XVII.
12383	Maydole, James II., and A. W. Morse.....	Harvesters, grass.....	Feb. 6, 1855.....	I.
12515	Mayer, Andrew.....	Gas burners, valves for.....	Mar. 14, 1855.....	V.
12741	Mayer, Andrew.....	Stoves, gas cooking.....	April 18, 1855.....	V.
	McArthur, A. H., & Co. (See Gibbs, Samuel W., assignor.)			
12210	McAvey, H. L.....	Refrigerators.....	Jan. 12, 1855.....	XVII.
13469	McBurnh, Augustus.....	Projectiles, percussion.....	Aug. 21, 1855.....	XIX.
12727	McClelland, Hugh K.....	Pen, fountain.....	April 18, 1855.....	XVIII.
13038	McComb, James J.....	Brakes, self-acting car, arrangement of bumpers for.	June 13, 1855.....	X.
13323	McCord, Joseph.....	Barties, policemen's.....	Nov. 20, 1855.....	XXII.
13149	McCorkle, S. B.....	Collars, horse, machines for stuffing.....	Dec. 18, 1855.....	XVI.
13583	McCormick, E.....	Planters, seed.....	Oct. 16, 1855.....	I.
12516	McCracken, James.....	Evaporating apparatus.....	Mar. 14, 1855.....	IV.
13131	McCurdy, R. A. L.....	Gins, cutting.....	June 26, 1855.....	III.
13097	McDonald, William, assignor to R. Hoe & Co.....	Printers' rules, machine for mitring.....	July 3, 1855.....	XVIII.
13010	McDonnell, Samuel T.....	Vapor, hydrocarbon, apparatus.....	June 5, 1855.....	IV.
13424	McEvoy, Charles A.....	Indicators, railroad station.....	Nov. 20, 1855.....	XXII.
12941	McGaffey, Ives W.....	Planters, seed.....	April 4, 1855.....	I.

13304	McIndire, Wm. J.....	Propelling vessels by the direct action of steam on the water.	Aug. 7, 1855.....	VII.
13327	McIntyre, White, & James. (See James, Daniel S., assignor.)	Valves for regulating steam-engines.....	Sept. 4, 1855.....	VI.
13384	McKenzie, Philip W.....	Wringers for clothes.....	Oct. 16, 1855.....	XVII.
	McLaughlin, John.....			
	McLean, Aaron R. (See Borden, Chester B. and Benj. S.)			
13385	McNair, John G.....	Carpets, manufacturing.....	Aug. 7, 1855.....	III.
13390	McNamee, Wm. H.....	Door-latches, locking spindle.....	Jan. 30, 1855.....	II.
13602	McNeill, John.....	Furnaces, charcoal.....	Mar. 28, 1855.....	V.
13246	McPherson, John L.....	Scales.....	Jan. 17, 1855.....	XII.
13497	McPherson, John L.....	Scales, weighing.....	Aug. 28, 1855.....	XII.
13240	Meacham, George A.....	Window-washer.....	Jan. 30, 1855.....	XVII.
13635	Mell, J. B.....	Gins, cotton.....	April 4, 1855.....	III.
13636	Mellish, Henry.....	Lanterns.....	April 4, 1855.....	XX.
12850	Mellish, Henry.....	Mills, grain, shoe for.....	May 30, 1855.....	XIII.
13376	Melville, Jas., and Jos. Burch.....	Printing textile fabrics, machine for.....	Aug. 7, 1855.....	XVIII.
13762	Melville, J. G., and Wm. Brayshaw.....	Looms.....	April 24, 1855.....	III.
13358	Meredith, Stephen.....	Disilling coal with hydrogen gas.....	July 31, 1855.....	IV.
12392	Merriam, M. H., and J. B. Crosby.....	Leather-splitting machines.....	Feb. 13, 1855.....	XVI.
13391	Merrill, William H.....	Blocks, hoisting.....	Dec. 25, 1855.....	VII.
13317	Merrison, Ralph S. (See Hollingsworth, Jehu.)			
13317	Messer, D. W.....	Processes for hulling cotton-seed.....	July 24, 1855.....	IV.
12468	Messer, Daniel W., assignor to D. W. Messer, R. B. Fitts, and A. James.	Stamp, hand.....	Feb. 28, 1855.....	XVIII.
	Messinger, John A., deceased, and E. A., administratrix. (See Foster, A.)			
12281	Mettam, Charles.....	Shutters, iron, rolling.....	Jan. 23, 1855.....	IX.
12321	Middlebrook, S. S., J. B. Blakelee, & C. T. Blakelee	Hat-bodies, machinery for felting.....	Jan. 30, 1855.....	III.
12366	Miles, Perches.....	Curtain fixtures.....	May 16, 1855.....	XVII.
13620	Miller, Benj. F.....	Chimney-stack.....	Oct. 2, 1855.....	V.
13392	Miller, Charles.....	Twining-machines.....	Dec. 25, 1855.....	I.
12443	Miller, Charles.....	Hinges, butt, machines for making.....	Feb. 28, 1855.....	II.
13084	Miller, Felix.....	Carpets, fastenings for.....	June 19, 1855.....	XVII.
12166	Miller, Henry.....	Brakes, car, steam, railroad.....	Jan. 5, 1855.....	X
704	Mills, Clark.....	Statue, equestrian.....	May 15, 1855.....	Design.
13263	Mingay, Edw.....	Derricks.....	July 17, 1855.....	XII.
12366	Minnis, Thomas S.....	Planters, seed.....	May 30, 1855.....	I.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13011	Minthorn, Daniel	Garments, braces for supporting	June 5, 1855	XXI.
13548	Mitchell, F. G.	Trusses, hernial	Sept. 12, 1855	XX.
13063	Mollere, Jean Pierre	Boot and shoe soles, machine for cutting the edges of.	June 13, 1855	XVI.
13095	Mollere, Jean Pierre	Boot and shoe soles and heels, machines for cutting leather into strips for.	June 19, 1855	XVI.
13178	Mollere, Jean Pierre	Sewing-machines	July 3, 1855	III.
13796	Mollere, Jean Pierre	Boot and shoe uppers, machines for cutting	Nov. 13, 1855	XVI.
13854	Mollere, Jean Pierre	Boots and shoes, machines for rasping and dressing the heels and soles of.	Nov. 27, 1855	XVI.
13914	Mollere, J. P.	Boots and shoes, soles and heels of, machines for cutting out and pricking and stamping the.	Dec. 11, 1855	XVI.
13950	Mollere, J. P.	Boots and shoes, soles and heels of, machines for polishing and burnishing the edges of.	Dec. 18, 1855	XVI.
13951	Mollere, J. P.	Boots and shoes on lasts, "uppers" of, machines for mounting the.	Dec. 18, 1855	XVI.
295	Monnin, Charles, and Wm. M. Booth	Lanterns, fastening	Jan. 30, 1855	Release.
13339	Monroe, James. (See Frost, J.)			
13062	Montgomery, James	Shafts, wrought-iron	July 24, 1855	XIII.
13599	Montgomery, Joseph & James	Fans, wheat	June 13, 1855	I.
13132	Montgomery, Richard	Beams, corrugated	Sept. 25, 1855	II.
13619	Moodey, Peter	Collar, horse, blocks	June 26, 1855	XVI.
13619	Moore, Charles	Boilers, steam	Oct. 2, 1855	VI.
13935	Moore, Daniel, assignor to himself, George S. Cameron, and James H. McWilliams.	Types, rubbing, machine for	Dec. 11, 1855	XVII.
13319	Moore, E. N., and J. H. Hanyan.	Gate, water, balance	July 24, 1855	XI.
12637	Moore, F. H.	Coal-hole covers	April 4, 1855	IX.
12517	Moore, Hiram	Pumps, operating, by wind	Mar. 14, 1855	XL
12603	Moore, Hiram	Planters, seed	Mar. 28, 1855	I.
13318	Moore, Jonas, and D. P. Adams	Medicines, pulverulent, apparatus for administering	July 24, 1855	XX.
12639	Moore, Thomas	Stove-pipe tube	April 4, 1855	V.
	Moore, Wm., Jr. (See Wilson, C.)			

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17969	Mosey, William	Compounds, hard-rubber, retorting	Oct. 30, 1855	IV.
17913	Morse, Charles	Planters, seed	Jan. 13, 1855	IV.
12458	Morgan, Elijah	Washing-machines	Jan. 17, 1855	I.
18616	Morgan, Elijah	Windmill	Mar. 14, 1855	XVII.
12468	Morgan, J. S.	Cultivators	July 17, 1855	XI.
12691	Morrel, A. H.	Planters, cotton-seed	April 10, 1855	I.
12667	Morrel, A. H.	Leather straps, machine for shaving	May 15, 1855	I.
19444	Morris, Charles	Press, seal and stamping	Feb. 28, 1855	XVII.
13679	Morris, Edmund	Pumps, chain, buckets for	Sept. 18, 1855	XVIII.
12296	Morris, Edmund		Jan. 23, 1855	XI.
	Morris, Francis. (See Gorton, S., and Francis Morris.)			
13883	Morris, G. M., and J. Newton	Knives, scouring, machines for	Dec. 4, 1855	XVII.
13885	Morris, Hiram, Elijah K. Gorton, and Edward Sarger	Water-wheel	Oct. 16, 1855	XI.
12339	Morrison, Edwin A., assignor to E. A. and R. J. Morrison, of Richmond, Va.	Harvesters, grain, delivering apparatus of	Jan. 30, 1855	I.
12393	Morrison, E. B. (See Wyckoff & Morrison.)			
	Morrison, Robert J., assignor to E. J. and Edwin A. Morrison	Harvesters, grass	Feb. 13, 1855	I.
13433	Morrison, Robert J.	Harvesters, cutting apparatus of	Aug. 14, 1855	I.
12248	Morse, A. W. (See Maydole, James H.)	Moulding-machine	Jan. 17, 1855	XIV.
12211	Morse, C. B.	Planing and matching-machine	Jan. 12, 1855	XIV.
12564	Morse, Ebenezer	Planters, seed	Mar. 20, 1855	I.
744	Morse, J. O., and J. W. Adams	Covers, steam-tube and hot-air	Nov. 27, 1855	Design.
13796	Morse, Joseph	Throttle-frames, giving tension to the endless band of	Nov. 13, 1855	III.
12167	Morse, Russell S.	Dryers, fruit	Jan. 6, 1855	V.
13580	Morton, John S.	Piano-forte action	Sept. 18, 1855	XVIII.
296	Moss, Lucien. (See Wilor, Wm., and Lucien Moss.)			
	Mott, Jordan L.	Caldron and furnace, mode of constructing a combined, for the use of agriculturists and others	Feb. 6, 1855	Reissue.
322	Mott, J. L.	Bathing-tubs	Aug. 14, 1855	Reissue.
	Mott, The J. L., Iron Works. (See John De-marest, assignor.)			
19647	Mueller, C. Gustav	Locks, bank	April 4, 1855	II.
	Muhle, Homan, and Ackerman. (See Ackerman, T., assignor.)			
19763	Munroe, William	Piano-forte action	April 24, 1855	XVIII.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12764	Murgatroyd, Thomas, jr.	Springs, carriage.....	April 24, 1855.....	X.
13223	Murphy, James.....	Boilers, steam.....	July 10, 1855.....	VI.
12640	Murtaugh, Andrew.....	Dumb-waiters, pulley arrangements for.....	April 4, 1855.....	XVII.
12440	Naylor, Peter. (See Comstock, John, assignor.)			
13706	Neal, Daniel B.....	Fire-arms, repeating, single-barrelled.....	Feb. 28, 1855.....	XIX.
12213	Neal, Daniel B.....	Planters, seed.....	Oct. 23, 1855.....	I.
12755	Neale, Robert.....	Printing, machine for, from engraved plates.....	Jan. 12, 1855.....	XVIII.
	Nelson, Geo., assignor to himself and Nehemiah Hunt.	Pavements, cast-iron.....	April 19, 1855.....	IX.
13500	Nelson, Jacob.....	Awning for horses and dray.....	Sept. 25, 1855.....	XXII.
13793	Nelson, Richard L.....	Wheel, tide, self-feathering, adjusting.....	Nov. 13, 1855.....	XI.
13549	Nesbitt, Jonathan, jr., and Thos. J. Cosley.....	Hominy-machines.....	Sept. 12, 1855.....	XIII.
12555	Nesmith, O. (See Taverner, E. C.)			
13039	Newbury, Frederick.....	Fire-arms.....	Mar. 20, 1855.....	XIX.
126	Newbury, Frederick.....	Fire-arms, revolving.....	June 13, 1855.....	XIX.
13582	Newbury, F.....	Fire-arms.....	July 31, 1855.....	Add'l imp't.
	Newby, Thomas. (See Conner, Jas., and Thos. Newby.)	Fire-arms, revolving.....	Sept. 18, 1855.....	XIX.
13040	Newcomb, Isaac M.....	Sawing-machine.....	June 13, 1855.....	XIV.
12215	Newcomb, John E.....	Harvesters, grain.....	Jan. 12, 1855.....	I.
	New England Glass Company. (See Leighton, William, assignor.)			
	Newsteter, Bull, & Haggard. (See Haggard, J., and Geo. Bull, assignors.)			
12556	Newton, Abner N.....	Cartridges.....	Mar. 20, 1855.....	XIX.
12282	Newton, Daniel.....	Folding-machines, metal.....	Jan. 23, 1855.....	II.
13096	Newton, Jonah.....	Cutters, mode of securing, to rotary discs.....	June 19, 1855.....	XIV.
	Newton, J. (See Morris, G. M., and J. Newton.)			
	Newton, Levi. (See Brainard, Lyman.)			
73	Newton, Orrin.....	Jugs, metallic, covers for.....	Oct. 9, 1855.....	Design.
13983	Nichols, Eben W.....	Bits, braces, securing, in their sockets.....	May 15, 1855.....	XIV.

12882	Nichols, John B.	Sewing-machines	Jan. 30, 1855	III.
12914	Nichols, Oldin	Windlasses	Jan. 12, 1855	XII.
13852	Nichols, Oldin, and A. M. George	Stone-dressing machines	Dec. 16, 1855	XV.
12888	Nichols & Horsford. (See Horsford & Nichols.)			
	Nicholson, Benj. S., administrator of Jno. F. Nicholson, deceased.	Harvesters, grain	May 15, 1855	I.
12869	Niles, A. H.	Carriages, joint-bodied	May 15, 1855	X.
12150	Niles, Peter H., assignor to P. H. Niles and Jona. A. Richards.	Curtain fixtures	Jan. 5, 1855	XVII.
13588	Niles, Peter H., assignor to R. C. Webster	Curtain fixtures	Sept. 18, 1855	XVII.
13757	Nixon, William	Planers, rotary, outer-head for	Nov. 6, 1855	XIV.
12410	Noble, Samuel H.	Wrenches, screw	Feb. 20, 1855	II.
13829	Noette, F., and A. Schmidt	Marble-sawing machine	Nov. 20, 1855	XV.
12691	Nordyke, E. (See Hunt, F. B.)			
	Norris, Benjamin T.	Mortising blinds, machine for	April 10, 1855	XIV.
	North American Kerocene Gas Light Company. (See Gesner, Abraham, assignor.)			
	North, Chase, & North, assignees. (See Gibbs, assignor.)			
710	North, John	Birds, sewing	May 30, 1855	Design.
13069	Northrup, Joel G., assignor to Jas. D. Mather	Printing-presses	June 13, 1855	XVIII.
13653	Norton, Harrison	Ploughs	Oct. 9, 1855	I.
	Nourse, Ruggles, Mason, & Co. (See Coburn, Francis S., assignor.)			
	Nourse, Ruggles, Mason, & Co. (See Knox, Saml. A., assignor.)			
12742	Noyes, C. A.	Lathes, slide-rest for	April 18, 1855	XIV.
13434	Noyes, Daniel	Forging machine	Aug. 14, 1855	II.
12394	Noyes, Ira. (See Richmond, E., assignor.)			
12441	Noyes, Josiah H.	Lamp-extinguishers	Feb. 13, 1855	V.
	Nudd, Amos	Engine, fire	Feb. 28, 1855	XI.
13136	Nutting, M. (See Bailey, Gilbert L., assignor.)			
	Ockershausen, H. J. (See Bolles, Jesse Norris, assignor.)			
	O'Connor, Bernard. (See Sprague, John A.)			
12926	Odiorne, Henry B.	Hemming and cording, guides for	May 8, 1855	III.
13550	Offhaus, Christian E.	Engine, steam, rotary	Sept. 12, 1855	VI.
12430	Ogden, John T., assignor to J. T. Ogden and Thos. Goddard.	Carriage-windows	Feb. 20, 1855	X.

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13810	Oliver, Andrew, and Chas. G. Judd. (See Ket-cham Charles, assignor.) Oliver, Reuben W., assignor to Reuben W. Oliver and H. Hoyt.	Scrapers, road.....	Nov. 13, 1855.....	IX.
13924	O'Neill, John.....	Clay, machines for pulverizing.....	July 10, 1855.....	XV.
740	O'Neill, Andrew, assignor to O'Neill & Hunter.....	Sieves.....	Oct. 30, 1855.....	*Design.
13758	O'Reilly, B.....	Fires, composition for kindling.....	Nov. 6, 1855.....	V.
12137	Orr, Adrian V. B.....	Shingle-machine.....	Jan. 5, 1855.....	XIV.
12919	Osborn & Hervey. (See Hervey & Osborn.) Osgood, Jason C..... Oswego River Starch Company. (See Duryea, Frederick V., assignor.)	Excavating machines, submarine.....	May 22, 1855.....	IX.
13117	Otis, George W. (See Griffin, Caleb H., assignor.)	Boring cylinders, machines for.....	June 19, 1855.....	II.
12519	Otis, Marvin S., assignor to Chas. Rumley.....	Compositions, fire-extinguishing.....	Mar. 14, 1855.....	IV.
13400	Overdeer, Edward F.....	Pitchers, molasses.....	Aug. 7, 1855.....	XVII.
	Page, Edward.....	Mill-saw, portable, circular.....	July 17, 1855.....	Extension.
	Page, George.....			
12245	Pagett, W. F. (See Hite, J. J., assignor.)	Brake-blocks for railroad cars.....	Jan. 17, 1855.....	X.
12765	Paige, Lucius.....	Desk, writing, combined table and.....	April 24, 1855.....	XVII.
12323	Palmer, P. A. (See Chambers, G. W., assignor.)			
305	Palmer, Aaron.....	Harvesters, grass, construction of the frame of.....	Jan. 30, 1855.....	I.
12604	Palmer, Aaron, and S. G. Williams.....	Harvesters, grain.....	April 10, 1855.....	Release.
	Palmer, George W.....	Bill-holder.....	Mar. 28, 1855.....	XXII.
13273	Palmer, J. N. (See Woodruff, G. B.)			
12445	Palmer, Oliver.....	Pump, rotary, wrecking.....	July 17, 1855.....	XI.
13097	Pangburn, Z.....	Vessels, construction of.....	Feb. 28, 1855.....	VII.
	Parce, Royal.....	Hoops, wooden, machine for cutting locks and tapering ends of.....	June 19, 1855.....	XIV.
12692	Parham, Samuel P.....	Gas regulator.....	April 10, 1855.....	V.
	Paris, W. M., and H. and E. Martinson. (See Martinson <i>et al.</i> )			

[illegible]



*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13655	Peaslee, W. A.	Telegraphs	Oct. 9, 1855	VIII.
13179	Peck, Milo.	Trip-hammers	July 3, 1855	II.
13137	Peckham, Henry	Straw-cutters.	June 26, 1855	I.
13180	Peckham, Paul	Dressing conical tapering surfaces, machine for.	July 3, 1855	XIV.
13994	Pécoul, Adolphe.	Log and sounding line, combined.	Dec. 25, 1855	VII.
	Pederson, J. (See Arneson, Pederson, & Rees.)			
	Pedrick, John C. (See Cunningham, Chas., assignor.)			
12429	Peliron, Jacob	Hoops, machine for manufacturing	Feb. 20, 1855	XIV.
13654	Pelton, A. S.	Steam-heating apparatus, radiators of.	Oct. 9, 1855	V.
13655	Pelton, Samuel	Horse-powers.	Dec. 18, 1855	XIII.
	Pennock, J. L. (See Fetter, G., and J. L. Pennock.)			
	Pennock, Moses and Samuel	Drill, seed.	Mar. 9, 1855	Extension.
13041	Penny, Jos. H., and Thos. B. Rogers	Propellers.	June 13, 1855	VII.
13289	Pepper, John, assignor to the "Franklin Mills"	Knitting-machines.	July 17, 1855	III.
13396	Perkins, D. W.	Chairs, dental.	Aug. 7, 1855	XX.
12871	Perkins, John M.	Axles, mode of attaching hubs to.	May 16, 1855	X.
13012	Perkins, Sylvanus	Wheels, wagon.	June 5, 1855	X.
13760	Perley, Charles	Chain locker pipes.	Nov. 6, 1855	VII.
	Perrin, William.	Dove-tails, square joint, machine for cutting.	Mar. 22, 1855	Extension.
12244	Perry, Alonzo D.	Fire-arms.	Jan. 17, 1855	XIX.
13359	Perry, Frederick	Valves, cut-off, for steam-boilers.	July 31, 1855	VI.
	Peterson, Cresson, & Stewart. (See Beesley, J., and E. J. Delany, assignors.)			
12642	Peterson, Frederick A.	Ceiling, floor, fire-proof.	April 4, 1855	IX.
12553	Petter, S. E.	Hats and bonnets, pressing	Feb. 6, 1855	III.
	Petter, S. E. (See Smith, J. A.)			
13761	Pettingill, H. N.	Boilers, steam.	Nov. 6, 1855	VI.
13917	Pettis, Joel W.	Engines, steam, packing pistons for.	Dec. 11, 1855	VI.
12743	Pheatt, J. T.	Life-preserving doors.	April 18, 1855	VII.
	Phelps, Dodge, & Co. (See Camp, Lyman C., assignor.)			

13070	Phelps, Orson C., assignor to O. C. Phelps and John Holton.	Filtering, metallic medium for.....	June 13, 1855.....	XI.
334	Phillips, William G.....	Gates, method of opening and closing.....	Aug. 21, 1855.....	Belane. I.
12557	Phillips, Daniel H.....	Planters, seed.....	Mar. 20, 1855.....	
13225	Phillips, John. (See Frantz, Benjamin, assignor.)			XIX.
12872	Phin, John.....	Locks, gun.....	Nov. 20, 1855.....	IX.
	Phillips, George W.....	Window-shutters.....	May 15, 1855.....	
13099	Pier & Payne. (See Payne & Pier.)			XIV.
13447	Pierce, David.....	Ware, wooden, machine for manufacturing.....	June 19, 1855.....	XVII.
	Pierce, Samuel, assignor to Curtis B. Pierce.....	Coffee-roaster.....	Aug. 14, 1855.....	
	Pierson, Charles T., assignee. (See Gardner, Smith.)			
13762	Pineus, Theodore. (See Koch, Louis, assignor.)			XV.
12554	Pitts, R. G.....	Marble-sawing machine.....	Nov. 6, 1855.....	I.
13321	Pitso, John A.....	Straw-cutters.....	Jan. 17, 1855.....	II.
13042	Plegar, Joseph.....	Hinges.....	July 24, 1855.....	
13551	Plumbe, John.....	Bricks, cutting clay into.....	June 13, 1855.....	I.
	Plummer, F., and G. B. Rollins.....	Planters, seed.....	Sept. 12, 1855.....	
	Polbanus, John. (See Hebbard, Henry, and J. Polbanus.)			II.
13025	Pollak, Anthony.....	Beams or girders, wrought iron.....	June 5, 1855.....	Disclaimer.
13100	Pollak, Anthony.....	Beams and girders, iron.....		
13984	Pollack, D., & J. R.....	Fan-blower.....	June 19, 1855.....	V.
12960	Pomeroy, J. H.....	Locks.....	Dec. 4, 1855.....	II.
13797	Pond, Erasmus A.....	Fill-making machine.....	May 30, 1855.....	XX.
12753	Porter, Ansel W.....	Carriage-bodies, mode of hanging.....	Nov. 13, 1855.....	X.
	Porter & Bradley, assignors to Dennison & Bradley.	Pump, elastic-tube.....	April 18, 1855.....	XI.
13397	Postley, Charles A.....			XII.
13138	Powell, A., Jr.....	Measuring and weighing grain, machine for.....	Aug. 7, 1855.....	XIX.
13621	Powell, Joseph.....	Bomb-shells, fuse-stock for.....	June 26, 1855.....	III.
12487	Powell, Samuel W.....	Knitting machines.....	Oct. 2, 1855.....	
13200	Power, John.....	Mill for grinding and bolting sumac.....	Mar. 7, 1855.....	XIII.
	Pratt, John R. (See Holmes, John B., assignor.)	Cork-machine.....	July 3, 1855.....	XIV.
	Pray, A. A., et al., assignees. (See Hooker, Thos., and W. D. Beaumont, assignors.)			IV.
12964	Prentiss, E. Freeman.....	Lubricating compounds.....	May 30, 1855.....	X.
12572	Prentiss, George A.....	Wheels, axles, and friction-rollers, arrangement of.....	Mar. 20, 1855.....	XVIII.
12901	Prince, Newell A.....	Pens, fountain.....	Jan. 23, 1855.....	

## Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Inventions or discoveries.	Date.	Class.
13995	Prince, Newell A..... Prince, R. (See Lewis, A., and R. Prince.) Prince & Stephenson. (See Thornton, Thos. F., assignor.)	Pens, fountain.....	Jan. 23, 1855.....	XVIII.
13996	Provoost, W. F. and C. J.....	Presses, cotton.....	Nov. 20, 1855.....	XII.
13956	Pullinger, Geo. B..... Pullman, Emily C., administratrix of Lewis Pullman.	Railroad crossings, automatic gate for..... Building and machines for removing.....	Dec. 18, 1855..... Aug. 21, 1855.....	IX. Extension.
	Putnam, James M., administrator of J. R. Putnam, deceased.	Harbors and rivers, machinery for removing bars and other obstructions from, and for forming and cleaning out docks.	May 5, 1855.....	Extension.
12961	Putnam, Silas S.....	Forging machine.....	May 30, 1855.....	II.
13918	Queal, Atchinson.....	Water-wheel, impact.....	Dec. 11, 1855.....	XI.
12317	Race, W., and B. Holly.....	Wheels, carriage.....	Jan. 30, 1855.....	X.
293	Radley, James, and John W. Hunter.....	Spark-arresters.....	Jan. 17, 1855.....	Release.
12783	Raines, Prealey.....	Planters, corn.....	May 1, 1855.....	I.
12243	Ramsay, George M..... Ramsay, Hastings, & Chamberlain. (See Hastings, Joel, et al.)	Moulding-machine.....	Jan. 17, 1855.....	XIV.
13401	Randall, S. G., and J. H. Jones.....	Planters, seed.....	Aug. 7, 1855.....	I.
13013	Rankin, Andrew..... Ransoun, F., and U. Wenman.....	Hata, manufacture of..... Engines, fire, mode of applying water to, so as to render their operation more effective.	June 5, 1855..... Feb. 9, 1855.....	III. Extension.
12553	Ransom, L. E..... Rathbone & Farmer. (See Farmer, Aaron D., & R. Rathbone.)	Bricks, manufacture of.....	Mar. 20, 1855.....	XV.
13436	Ray, Richard.....	Cotton-stalks, machine for gathering.....	Aug. 14, 1855.....	I.
13528	Ray, Richard.....	Cars, earth, mode of operating and dumping.....	Sept. 4, 1855.....	X.
13529	Ray, Richard..... Read, J. A., et al. (See Smith, G., et al., assignors.) Read, J. A., et al. (See Smith, Brown, & Read, assignors.)	Cars, dumping, operating.....	Sept. 4, 1855.....	X.

13731	Reboul & Fralesinet. (See Fralesinet, E. P., and H. E. Reboul.)	Spoke and axe-helve machine .....	Oct. 30, 1855.	XIV.
13637	Redmond, Owen.....	Ratans, & Co., machine for preparing.....	Oct. 2, 1855.	XXII.
	Reed, C. C., assignor to C. C. Reed and Wm. S. Reinert.			
	Reed, George P. (See Hawkes, Chas. W., and Reed.)			
12325	Reed, Jesse.....	Cable-stoppers .....	Jan. 30, 1855.	VII.
12468	Reed, Jesse.....	Steering apparatus.....	Mar. 7, 1855.	VII.
	Reed, Jesse.....	Pumps .....		Disclaimer.
12573	Reed, Jesse.....	Pumps .....	April 16, 1855.	Extension.
12216	Reed, John A.....	Valves, steam-engine .....	May 15, 1855.	VI.
13919	Reed, John A.....	Engines, oscillating.....	Jan. 12, 1855.	VI.
13583	Reed, Shepherd W.....	Hubs, carriage.....	Dec. 11, 1855.	X.
	Rees, H. (See Arneson, Pederson, and H. Rees.)	Boilers, steam, safety apparatus for .....	Sept. 18, 1855.	VI.
	Rees, James. (See Carter, Henry, and Jas. Rees.)			
13685	Rehn, Isaac.....	Photographic bath .....	Dec. 4, 1855.	XVIII.
13708	Reichenbach, Oscar.....	Oil, preparing cotton-seed for extracting.....	Oct. 3, 1855.	IV.
13522	Reilly, John.....	Harvesting machines .....	Nov. 20, 1855.	I.
13290	Reinhardt, A., assignor to Schlumberger & Co.....	Wool, machinery for preparing, for combing.....	July 17, 1855.	III.
	Rennie, Robert, assignee. (See Hawes, R. L., assignor.)			
	Remington, S. (See Landphere, Asa.)			
12921	Reynan, J. B.....	Fences .....	May 22, 1855.	IX.
13623	Reynolds, E. K.....	Clock-escapement.....	Oct. 2, 1855.	VIII.
13103	Reynolds, Harrison D.....	Grain-cleaners .....	June 19, 1855.	I.
12394	Reynolds, Ira.....	Ploughs.....	Feb. 13, 1855.	I.
13292	Reynolds, John A.....	Fire-arms .....	July 17, 1855.	XIX.
13293	Reynolds, John A.....	Fire-arms .....	July 17, 1855.	XIX.
13294	Reynolds, John A.....	Fire-arms, repeating, apparatus for cooling (L).....	July 17, 1855.	XIX.
12832	Rhodes, M. M. and J. C.....	Jacks, machine for leathering.....	May 8, 1855.	XXII.
13350	Rhodes, William H.....	Legs, artificial.....	July 31, 1855.	XX.
13143	Rice, A. S., and Guy Tozer.....	Saw-mill dog .....	Sept. 8, 1855.	XIV.
13796	Rice, Charles, and Sylvanus H. Whorf.....	Shoes, lasting and applying soles to.....	Nov. 13, 1855.	XVI.
13972	Richmond, E., assignor to Ira Noyes.....	Lamp-extinguishers.....	Dec. 18, 1855.	V.
	Richmond, Wager, & Smith. (See Wager, Richmond, & Smith.)			
12690	Rider, F. C.....	Lamps.....	Mar. 14, 1855.	V.

*Alphabetical List of Patentes—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13501	Riehl, M.....	Books, machine for trimming .....	Aug. 28, 1855.....	XVIII.
741	Ripley, E. (See Vedder, N. S.)			
	Ripley, E., and N. S. Vedder, assignors to John- son, Cox, Lealey, & Co.	Stoves, cooking .....	Oct. 30, 1855.....	Design.
12830	Ripley, Ezra.....	Faucet, balance-gate.....	May 8, 1855.....	XI.
13996	Ripley, Ezra.....	Mills for grinding grain, &c .....	Dec. 25, 1855.....	XIII.
13997	Robb, James.....	Corn-shellers .....	Dec. 25, 1855.....	I.
13044	Robbins, E. A.....	Accordeons, method of tuning .....	June 13, 1855.....	XVIII.
13322	Robbins, H. T.....	Looms, shuttle-guides for .....	July 24, 1855.....	III.
13601	Robbins, John S.....	Ships' rudders .....	Sept. 25, 1855.....	VII.
12766	Robbins, Louis S.....	Stone, machines for polishing .....	April 24, 1855.....	XV.
13448	Robbins, Z. Coleman, assignor to A. Martin.....	Mills for compressing and grinding grapes and other small fruit.....	Aug. 14, '55.....	XIII.
12284	Roberts, Albert W .....	Engines, fire .....	Jan. 23, 1855.....	XI.
13827	Rice, Charles, and S. H. Whorf.....	Boots and shoes, machine for preparing leather for manufacture of .....	Nov. 20, 1855.....	XVI.
13920	Rice, Charles, and S. H. Whorf.....	Leather, machines for cutting articles from.....	Dec. 11, 1855.....	XVI.
12490	Rice, Edward .....	Car, railroad, coupling.....	Mar. 7, 1855.....	X.
13139	Rice, Elisha E.....	Brake, railroad car.....	June 26, 1855.....	X.
12139	Rich, Obadiah.....	Processes for extracting tannin from leather.....	Jan. 5, 1855.....	IV.
	Richards, Capron, & Dennis. (See Capron, Addi- son, assignor.)			
12826	Richards, Gilbert.....	Spark-arrester.....	May 8, 1855.....	VI.
	Richards, Henry M. (See Dennis, Joseph S., and A. Capron, assignors.)			
	Richards, Jonathan A. (See Niles, Peter H., as- signor.)			
	Richardson & Elder. (See Elder, John A., and John Richardson.)			

13109	Richardson, John.....	Harvester rakes, &c., producing intermittent oscillation of motion in.....	June 19, 1855.....	I.
13101	Richardson, L. T.....	Chisels, socket, handles for.....	June 19, 1855.....	XIV.
716	Richardson, N. P.....	Franklin fire-place.....	July 31, 1855.....	Design.
719	Richmond, Apollon, assignor to A. C. Barstow & Co.	Stoves, cooking.....	Aug. 14, 1855.....	Design.
12831	Roberts, Albert W.....	Hose-pipes, nozzle for.....	May 8, 1855.....	XI.
12857	Robertson, T. J. W., assignor to Robertson & A. E. Beach.	Sewing-machines.....	Mar. 20, 1855.....	III.
12923	Robertson, T. J. W.....	Sewing-machines.....	May 22, 1855.....	III.
13064	Robertson, T. J. W.....	Sewing-machines.....	June 13, 1855.....	III.
19469	Robins, Newton D.....	Soda-fountains, combination of an air-chamber, water-cooler, and force-pump in.....	Mar. 7, 1855.....	IV.
13275	Robinson, Frederick R.....	Sewing-machines, guide for.....	July 17, 1855.....	III.
19428	Robinson, Jonathan A.....	Cultivator, hand.....	Feb. 20, 1855.....	I.
13257	Robinson, John P.....	Plane for finishing grooves in gutters, &c.....	Dec. 18, 1855.....	XIV.
12243	Robinson, Samuel H.....	Kilns, lime.....	Jan. 17, 1855.....	XV.
13230	Robinson, William.....	Slave-machine.....	July 10, 1855.....	XIV.
13181	Rockafellow, Samuel.....	Mowing-machines.....	July 3, 1855.....	I.
334	Rockafellow, Samuel.....	Mowing-machines.....	Dec. 11, 1855.....	Reissue.
997	Rockwell, Francis A., assignor to John W. Rockwell	Candlesticks.....	Feb. 28, 1855.....	Reissue.
12833	Rode, Charles R.....	Sash-supporters.....	May 8, 1855.....	IX.
12693	Rodefer, Joseph.....	Bedstead-fastenings.....	April 10, 1855.....	XVII.
12826	Rogers, Henry.....	Pump, force.....	Jan. 30, 1855.....	XI.
12140	Rogers, Henry J.....	Signal-flags.....	Jan. 5, 1855.....	VII.
	Rogers, Thomas B. (See Penny, Jos. H., and Thos. B. Rogers.)			
717	Rogers, W. A.....	Bottles and jars, labels on.....	Aug. 7, 1855.....	Design.
13500	Rohan, David.....	Shutters or blinds for stores.....	Aug. 28, 1855.....	IX.
12855	Rolland, Jean Louis.....	Ovens for baking bread and other aliments.....	Nov. 27, 1855.....	V.
12317	Rolland, John Lewis.....	Dough, kneading, machines for.....	Jan. 12, 1855.....	XVII.
12998	Rollins, John P.....	Bit, extension.....	Dec. 25, 1855.....	XIV.
	Rollins & Plummer. (See Plummer, F., and G. B. Rollins.)			
13182	Rollow, John J.....	Corn, machine for shucking and shelling.....	July 3, 1855.....	I.
19447	Romaine, Robert.....	Planters, seed.....	Feb. 28, 1855.....	I.
12285	Root, E. K.....	Rifling-machine, compound.....	Jan. 23, 1855.....	XIX.
12374	Root, E. K.....	Lathe, slide.....	May 8, 1855.....	XIV.
12929	Root, E. K.....	Fire arms, revolving.....	Dec. 25, 1855.....	XIX.
12943	Roscoe, Stephen R.....	Fire-escape ladder.....	April 4, 1855.....	XXII.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12695	Rose, Charles.....	Blinds, Venetian window .....	April 10, 1855.....	IX.
12694	Rose, Ira.....	Straw-cutters.....	April 10, 1855.....	I.
12665	Rosenthal, Henry A.....	Uterine supporters.....	May 30, 1855.....	XX.
13499	Ross, F. A., and W. H. Marshall.....	Sewing-machine cases .....	Aug. 28, 1855.....	III.
13764	Ross, J. W.....	Sashes, window, mode of hanging.....	Nov. 6, 1855.....	IX.
13183	Ross, S. F. (See Cahoon, P. S., and Ross.)			
13657	Rowand, A. H.....	Printing-presses, machine for feeding sheets of paper to.....	July 3, 1855.....	XVIII.
12922	Rowland, Robert, Dr.....	Vinegar rooms and white lead corroding chambers, manual arrangement of.....	Oct. 9, 1855.....	IV.
12163	Rowland, Thomas F., James Stephens, and W. H. Mason.....	Drying grain, apparatus for.....	May 22, 1855.....	V.
12163	Rudolph, F.....	Scaffolds, elevating .....	Jan. 5, 1855.....	IX.
12437	Ruggles, B. H. (See Billings, A. C., and B. H. Ruggles.)			
12470	Ruggles, Nourse, Mason, & Co. (See Coburn, Francis S., assignor.)			
12437	Ruggles, Nourse, Mason, & Co. (See Knox, Samuel, assignor.)			
12437	Ruggles, Stephen P.....	Gas-regulators.....	Aug. 14, 1855.....	V.
12470	Ruggles, Stephen P.....	Stamp, hand.....	Aug. 21, 1855.....	XVIII.
12782	Rumley, Charles, assignor. (See Otis, Marvin S., assignor.)			
12327	Russell, Clement.....	Horse-powers .....	May 1, 1855.....	XIII.
12466	Russell, David.....	Harvester-cutters.....	Jan. 30, 1855.....	I.
12696	Russell, David.....	Ploughs, spade.....	Feb. 28, 1855.....	I.
12786	Russell, David.....	Straw-cutters.....	April 10, 1855.....	I.
13498	Russell, David.....	Sash, window, supporters .....	May 1, 1855.....	IX.
12463	Russell, E. G.....	Valve, regulating, for steam-engines .....	Aug. 28, 1855.....	VI.
12559	Russell, Fisk.....	Mowing-machines .....	Feb. 28, 1855.....	I.
12438	Russell, Fisk.....	Mowing-machines .....	Mar. 20, 1855.....	I.
12438	Russell, Fisk.....	Harvesters.....	Aug. 14, 1855.....	I.

13263	Russell, J. Thornton.....	Wagons.....	July 24, 1855.....	X.
13104	Russell, John W.....	Turning excentrics, chuck for .....	June 19, 1855.....	XIV.
13281	Russell, Jesse.....	Kilns, brick .....	Mar. 14, 1855.....	XV.
12875	Russell, S. J.....	Furnace, hot-air .....	May 15, 1855.....	V.
323	Ruttan, Henry .....	Buildings, &c., warming and ventilating.....	Aug 14, 1855.....	Release.
128	Ruttan, Henry .....	Ventilating and warming houses .....	Dec. 4, 1855.....	Add'l Imp't.
13274	Ryan, John.....	Car, railroad, coupling .....	July 17, 1855.....	X.
13765	Sadgebury, James .....	Clamps, clothes.....	Nov. 6, 1855.....	XVII.
12425	Sarge, et al. (See Morris, et al.)	Heater, air.....	Feb. 20, 1855.....	V.
13364	Sallabury, Eliam C.....	Cars, railway, excluding dust from .....	July 31, 1855.....	X.
13236	Sampson, James H.....	Boo-trees .....	Dec. 4, 1855.....	XVI.
13331	Sanborn, Augustus, assignor to C. and T. Fairbanks & Co.)	Scales, union-platform .....	July 24, 1855.....	XII.
306	Sandern, B. D.....	Winnowing-machine.....	April 10, 1855.....	Release.
13324	Sandgren, T. E.....	Hydrodynamic friction-joints .....	July 24, 1855.....	XI.
13512	Sanford, D. W. C.....	Refrigerators .....	Nov. 13, 1855.....	V.
12426	Sanford, N. C.....	Skates.....	Feb. 20, 1855.....	XXII.
12427	Sanford, N. C.....	Skates.....	Feb. 20, 1855.....	XXII.
12318	Sanger, Samuel T.....	Carriage-crank .....	Jan. 19, 1855.....	X.
325	Sanger, J. (See Parker, C. E., and J. Sanger.)	Lanterns.....	Aug. 21, 1855.....	Release.
	Sargent, Epes W. (See Weissenborn, Gustavus, assignor.)			
	Sargent, Jas., and D. P. Foster. (See Tulmon, C. C., assignor.)			
13801	Satterthwaite, Barclay A.....	Teeth, artificial, preparing .....	Nov. 13, 1855.....	XX.
12931	Saunders, Chauncey W. (See Chase, Nehemiah B.)	Ships and other vessels, vibrating stop-water for.....	July 10, 1855.....	VII.
13767	Saunders, Stephen.....	Screw-blanks, arranging and feeding .....	Nov. 6, 1855.....	II.
13667	Savage, Elliot.....	Cans, double-seaming, machine for .....	Oct. 9, 1855.....	XVII.
13799	Sawyer, S.....	Projectile, compound.....	Nov. 13, 1855.....	XIX.
12141	Sawyer, Sylvanus.....	Rakans, machine for splitting into strips.....	Jan. 5, 1855.....	XXII.
13600	Saxton, Nathaniel S.....	Adding numbers, machine for.....	Nov. 13, 1855.....	XIII.
	Schell & Finger. (See Finger, Louis, assignor.)			
12729	Schenck, John B.....	Valve gear, cut-off .....	April. 18, 1855.....	VI.
13233	Schemer, Frederick.....	Scales, counter .....	July 10, 1855.....	XII.
13603	Schevenell, H. and Richard S.....	Mouldings, ornamental, machines for cutting .....	Sept. 25, 1855.....	XIV.
12637	Schinz, Charles.....	Furnaces, self-regulating, hot blast for.....	Dec. 4, 1855.....	V.



*Alphabetical List of Patentes—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12967	Schlough, Jacob C.	Furnaces, grate-bars for.....	May 30, 1855.....	V.
12968	Schlumberger & Co. (See Reinhardt, A.)	Piano-fortes.....	Dec. 18, 1855.....	XVIII.
12969	Schonacker, H.	Furnaces, apparatus for supplying, with pulverized material.....	Jan. 23, 1855.....	V.
12970	Schmidt, A. (See Noette, F., and A. Schmidt.)	Locks, door, alarm attachment for.....	May 1, 1855.....	II.
12971	Schmidt, Eloy	Meats, processes of curing.....	Mar. 14, 1855.....	XVII.
12972	Schneider, John.....	Ore, galena or lead, treating.....	Dec. 18, 1855.....	II.
12973	Scholefield, H. (See Bell & Scholefield.)	Mills, portable grinding.....	July 10, 1855.....	Reissue.
12974	Schooley, John C.	Shingle-bolt, method of feeding the, to knives.....	Oct. 9, 1855.....	XIV.
12975	Schwabe, Jul. E.	Hubs, attaching, to axles.....	Dec. 18, 1855.....	X.
12976	Scott, Lyman	Railroads, guard rails of, to be used with pronged cow-catchers.....	June 13, 1855.....	IX.
12977	Scott, William J.	Hat bodies, felting.....	Dec. 18, 1855.....	III.
12978	Scoville Manufacturing Company. (See Brown, Edward, assignor.)	Fire-arms, portable.....	Jan. 30, 1855.....	XIX.
12979	Scripture, E. S.	Drills, seed.....	June 19, 1855.....	I.
12980	Scripps, J. A. (See Guard, C. H., assignor.)	Franklinite ore, methods of working.....	Jan. 30, 1855.....	IV.
12981	Searles, H. D.	Hats, ventilating.....	July 31, 1855.....	XXI.
12982	Searles, Isaac	Moulding circular and under-cut work.....	Oct. 2, 1855.....	II.
12983	Selhorn, A. O. H. P.	Looms, harness for, machines for making.....	June 26, 1855.....	III.
12984	Selby, James	Furnaces for heating buildings.....	Aug. 14, 1855.....	V.
12985	Selleck, Thaddeus	Metal, sheet, pipes, machines for helically creasing.....	May 30, 1855.....	II.
12986	Sellers, William, and James Walker	Sifting, apparatus for.....	Aug. 14, 1855.....	XXII.
12987	Sennett, Jacob	Planters, seed.....	July 24, 1855.....	I.
12988	Sexton, Samuel B.			
12989	Sexton, S. B. (See Conklin, James H., assignor.)			
12990	Seymour, Alfred B.			
12991	Seymour, Edward L., assignor to W. O. Bourne.			
12992	Seymour, P.			
12993	Shaler, J. S., et al. (See Taggart, John, assignor.)			

12576	Shaler, Reuben.....	Ore-separator.....	Mar. 20, 1855.....	II.
12577	Sharpe, Christopher, and George E. Adrians.....	Tanning-machine.....	June 13, 1855.....	XVI.
12578	Shattuc, Samuel.....	Collar, horse.....	Dec. 18, 1855.....	XVI.
12579	Shaw, J. A. B. (See Wimber, John M., assignor.)			
12580	Shaw, William F.....	Gas-heater.....	Jan. 23, 1855.....	V.
12581	Shoemaker, George S.....	Musical reed instruments.....	July 31, 1855.....	XVIII.
12582	Sherman, H. N.....	Headstead-screws, forming heads on.....	Nov. 13, 1855.....	XVIII.
12583	Sherman, Josiah J.....	Processes for preparing liquids for aiding digestion.....	May 8, 1855.....	IV.
12584	Shibbles, W., assignor to W. Shibbles and Edward O'Brien.....	Sails, top, reefing.....	May 30, 1855.....	VII.
12585	Shinn, John. (See Whitehead, William.)			
12586	Shive, David.....	Daguerreotype-plates, machine for polishing.....	Mar. 20, 1855.....	XVIII.
12587	Shive, David.....	Daguerreotype-plate holder.....	Oct. 9, 1855.....	XVIII.
12588	Sholl, David.....	Coffins.....	Mar. 28, 1855.....	XXII.
12589	Shryock, Samuel W.....	Drilling and boring machine.....	Nov. 6, 1855.....	II.
12590	Sickels, Gerard.....	Coal-sifters.....	Nov. 20, 1855.....	V.
12591	Siegfried, W. D. (See Mathers, E.)			
12592	Sigourney, John M.....	Wheels, car, cooling cast-iron.....	Sept. 18, 1855.....	X.
12593	Silver, Thomas.....	Engine's marine, steam-governors.....	July 3, 1855.....	VI.
12594	Silvey, Joseph C.....	Locks, door.....	June 13, 1855.....	II.
12595	Simmons, Nathan.....	Cloth-stretching rollers.....	Dec. 4, 1855.....	III.
12596	Simonton, Thomas C., and Loren J. Wicks.....	Straw-cutters.....	April 10, 1855.....	I.
12597	Simpson, John.....	Horse-powers.....	April 18, 1855.....	XIII.
12598	Simpson, John.....	Gins, cotton.....	Aug. 14, 1855.....	III.
12599	Singer, Isaac M.....	Carving wood, &c., machine for.....	Dec. 11, 1855.....	XIV.
12600	Singer, Isaac M.....	Sewing machines.....	Feb. 6, 1855.....	III.
12601	Singer, Isaac M.....	Sewing machines.....	May 30, 1855.....	III.
12602	Singer, Isaac M.....	Sewing machines.....	June 12, 1855.....	III.
12603	Singer, Isaac M.....	Sewing machines.....	July 31, 1855.....	III.
12604	Singer, Isaac M.....	Sewing machines.....	Oct. 9, 1855.....	III.
12605	Singer, Isaac M.....	Sewing machines.....	Oct. 9, 1855.....	III.
12606	Singer, Isaac M.....	Sewing machines.....	Oct. 16, 1855.....	III.
12607	Singer, Isaac M.....	Sewing machines.....	Nov. 6, 1855.....	III.
12608	Singer, Isaac M.....	Sewing machines.....	Dec. 18, 1855.....	III.
12609	Sirret, Emile.....	Rakes.....	Jan. 5, 1855.....	I.
12610	Sizer, Henry, and Elisha Stone.....	Hatchways, opening and closing, apparatus for.....	Oct. 2, 1855.....	IX.
12611	Skellay, John.....	Carriage-wheels.....	Jan. 30, 1855.....	X.
12612	Skinner & Brothers, assignees. (See Gibbs, Sam'l W., assignor.)			

*Alphabetical List of Patentes—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12658	Skinner, S. A.	Gates, farm.	Oct. 9, 1855.	IX.
12186	Slaight, Thomas	Locks, pad.	Jan. 5, 1855.	II.
12835	Sloan, Thomas J.	Boilers, steam, apparatus for regulating supply of water to.	May 8, 1855.	VI.
332	Slocum, Samuel	Pins, sticking into papers, machine for.	Oct. 1, 1855.	Extension.
12233	Slocum, Samuel	Pins in paper, machine for sticking.	Dec. 4, 1855.	Release.
13471	Smart, Joseph	Pumps, &c., self-regulating, water-packing for.	July 10, 1855.	XI.
13327	Smith, Albert M.	Car, railroad, seats.	Aug. 21, 1855.	X.
13904	Smith, Alfred E.	Axles, washers for.	July 24, 1855.	X.
12644	Smith, Alfred E.	Shafts to axles, mode of securing.	Nov. 13, 1855.	X.
12644	Smith, Alpheus D.	Car, railroad, seats.	April 4, 1855.	X.
12241	Smith, Arnton	Ploughs.	Jan. 17, 1855.	I.
12754	Smith, E. Harry, assignor to Wheeler & Wilson, manufacturing company.	Sewing-machines.	April 18, 1855.	III.
13184	Smith, Edward Q.	Mortises, method of cutting straight or curved.	July 3, 1855.	XIV.
684	Smith, G. H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, cooking.	Jan. 5, 1855.	Design.
685	Smith, G. H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, parlor cook.	Jan. 5, 1855.	Design.
686	Smith, G. H. Brown, and J. Holzer, assignors to Abbott & Lawrence.	Stoves.	Jan. 5, 1855.	Design.
702	Smith, G. H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Water-coolers.	May 1, 1855.	Design.
14001	Smith, Gilbert	Fire-arms, breech-loading.	Dec. 25, 1855.	XIX.
13413	Smith, George W.	Tanning apparatus.	Aug. 7, 1855.	XVI.
14000	Smith, George W.	Looms, for weaving wire.	Dec. 25, 1855.	III.
742	Smith, G., and H. Brown, assignors to Leibrant, McDowell, & Co.	Stoves, coal.	Nov. 6, 1855.	Design.
12247	Smith, H. B.	Sewing-machine.	Jan. 17, 1855.	III.
13054	Smith, H. R.	Seeding-machines.	Oct. 9, 1855.	I.
13049	Smith, Henry W.	Organs and melodeons, coupling for.	June 13, 1855.	XVIII.

12003	Smith, Hesebiah B.	Mortising-machine.	Oct. 9, 1855.	XIV.
12766	Smith, J. E., and S. E. Peter.	Paper bags and envelopes, machine for making.	May 1, 1855.	XVIII.
12531	Smith, James.	Stone pasteboard, manufacture of.	Mar. 14, 1855.	XV.
13413	Smith, James, assignor to Smith & Botterill.	Looms, temples for.	Aug. 7, 1855.	III.
12454	Smith, Jeremiah P.	Corn-shellers.	Feb. 28, 1855.	I.
13922	Smith, Jeremiah P.	Corn-shellers.	Dec. 11, 1855.	I.
12187	Smith, John. (See Gallaher, John S., jr., and John W. Smith.)	Engines, steam, crank connexion in double piston.	Jan. 5, 1855.	VI.
12491	Smith, John W., and John S. Gallaher, jr.	Fire-place.	Mar. 7, 1855.	V.
12732	Smith, Joseph. (See Gaston, Alexander H.)	Bearings, compensation.	April 18, 1855.	XII.
12354	Smith, Noah C. (See Savage and Smith.)	Street-sweeping machine.	Feb. 6, 1855.	IX.
13709	Smith, Robert A., and John Hartman, jr.	Sweeping gutters, machine for.	Oct. 23, 1855.	XXII.
13014	Smith, S. J. H.	Portfolios.	June 5, 1855.	XVIII.
12797	Smith, Solomon P.	Sash, &c., machine for clamping.	May 1, 1855.	XIV.
12424	Smith, S. R., and E. Cowies.	Silvers, for cutting wood into, machines for.	Feb. 20, 1855.	XIV.
12806	Smith, T. B., and E. Strange. (See Strange, E., and T. B. Smith.)	Wheel, current.	Mar. 28, 1855.	XI.
12653	Smith, William S.	Cultivators.	April 4, 1855.	I.
12659	Smith, Wager & Richmond. (See Wager, Richmond & Smith.)	Bottle fastenings, register.	Oct. 9, 1855.	XXII.
12698	Smith, John, jr.	Balances, platform.	April 10, 1855.	XII.
12561	Smylie, David M.	Planters, seed.	Mar. 20, 1855.	I.
12970	Snell, Benjamin M.	Looms.	May 30, 1855.	III.
12970	Snell, Daniel W.			
12970	Snell, Robert. (See Chilcott, John.)			
12970	Snow, O., and G. B. Farnum. (See Barden, John S., assignor.)			
13440	Snyder, T. L. (See Chatcheld, Henry, assignor.)	Brake, railroad car.	Aug. 14, 1855.	X.
12655	Somerby, Gustavus A., and Charles W. Fogg.	Fire-arms, breech-loading.	April 4, 1855.	XXIX.
13234	Soule, George H.	Excavators.	July 10, 1855.	IX.
12700	Soule, Samuel W.	Cameras, plate-holder for.	April 10, 1855.	XVIII.
13106	Southworth, A. S.	Stereoscopic pictures, apparatus for moving.	June 19, 1855.	XVIII.
13285	Southworth, A. S., and J. J. Hawes.	Railroad, draw-bridge, signal.	July 25, 1855.	IX.
13285	Spafford, Sophia B., and George Alexander, administrator of Simeon L. Spafford.			

## Alphabetical List of Patentes—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13044	Sparhawk, G. (See Jilison & Sparhawk.)			XX.
13064	Spaulding, Addison.....	Legs, artificial.....	Aug. 7, 1855.....	XIV.
12796	Spaulding, Isaac.....	Saw-sets.....	Dec. 18, 1855.....	XIV.
13662	Speed, J. J., jr., and J. A. Bailey.....	Mitre-box.....	May 1, 1855.....	X.
12448	Spencer, George S. G.....	Springs, railroad car, conical plate.....	Sept. 12, 1855.....	V.
13015	Spencer, George S. G.....	Furnaces, hot-air.....	Feb. 23, 1855.....	V.
13016	Spencer, Wm. A., administrator. (See Foster, A.)	Furnace for warming buildings.....	June 5, 1855.....	XIV.
12562	Spiller, Joseph D.....	Bruch-rest.....	June 5, 1855.....	X.
12331	Sprague, John A., and Bernard O'Connor.....	Carta, self-loading.....	Mar. 20, 1855.....	I.
12492	Squire, George L.....	Straw-cutters.....	Jan. 30, 1855.....	IV.
13140	Szalnthorp, John.....	Candles, machines for making.....	Mar. 7, 1855.....	IX.
	Starr, Alfred A.....	Blinds, window, adjuster of.....	June 26, 1855.....	
	Starr, Frederick, assignee. (See Gibbons, Dwight, assignor.)			
12773	Stedman, George W.....	Sewing-machines.....	Mar. 20, 1855.....	III.
12798	Stedman, George W.....	Sewing-machines.....	May 1, 1855.....	III.
13301	Stedman, George W.....	Sewing-machines.....	July 3, 1855.....	III.
13856	Stedman, George W.....	Sewing-machines.....	Nov. 27, 1855.....	XIV.
12449	Steele, William.....	Tenoning-machine.....	Feb. 28, 1855.....	II.
13118	Steer, Isaac H., assignor to Henry Carter.....	Nuts, making.....	June 19, 1855.....	XV.
13411	Stenger, Philip, assignor to Pascal Yearley.....	Glass, sheet, manufacture of.....	Aug. 7, 1855.....	XIV.
12423	Stephens, James, et al. (See Rowland, Thos. F.)	Lathes, slide-rest for.....	Feb. 20, 1855.....	I.
13530	Stephens, William.....	Seeding-machines.....	Sept. 4, 1855.....	
	Stephenson, C. and G.....			
	Stephenson & Prince. (See Thornton, Thos. F., assignor.)			
13047	Sterry, Edward A.....	Faucet.....	June 13, 1855.....	XL
12924	Stevens, E. M., Jos. B. Crosby, & Jos. W. Pearson.....	Planters, seed.....	May 22, 1855.....	I.
12169	Stevens, Joshua, assignor to Massachusetts Arm Company.....	Fire-arms, repeating.....	Jan. 5, 1855.....	XLX.
13141	Stevens, L., and S. B. Ellithorp.....	Blinds, window, doors, &c.....	June 26, 1855.....	IX.

13107	Stevens, Sylvester Stevens, Robert L. and Francis B., assignors to James A. Stevens.	Engines, rotary Valves, steam, of steam-engines when the steam is cut off and allowed to act expansively, method of working the. Life-preserver, bed-boat or. Tin cans, apparatus for soldering. Metals, machines for burnishing.	June Jan.	19, 1855 5, 1855	VI. Extension.
12450	Stevenson, Joseph		Feb.	28, 1855	VII.
12919	Stevenson, William J		Jan.	12, 1855	II.
12709	Stever, Jeremiah Stewart, Crescen, & Peterson. (See Beasley, J., and E. J. Delany, assignors.)		May	1, 1855	II.
12493	Stewart, Linus		Mar.	7, 1855	XIV.
14003	Stickney, Ancil	Saw-plates, constructing, and setting teeth therein. Planters, hand seed.	Dec.	25, 1855	I.
12807	Stillman, Alfred, deceased, Elizabeth A. Stillman, administratrix of.	Furnaces for burning pebbles.	May	2, 1855	V.
13363	Stillman, Paul	Boilers, steam, water-gauges for.	July	31, 1855	VI.
12396	Stillman, S. N. and W. F.	Rates, garden	Feb.	13, 1855	I.
12676	Stimpson, James C. (See Hall, Hiram L., assignor.)	Butter-coolers	May	15, 1855	XVII.
13584	Stinson, John	Latitude and longitude, instrument for determining.	Sept.	22, 1855	VIII.
13185	Stinson, William	Planters, corn	July	3, 1855	I.
13330	St. John, M. W., and J. Brown	Street sweeping-machine.	Nov.	20, 1855	IX.
12332	Stockdale, Joseph	Cultivator-teeth	Jan.	30, 1855	I.
12260	Stockstill, Stephen L., and Peter H. Humes.	Planters, seed	Jan.	17, 1855	I.
12532	Stoddard, F. S.	Spinning wool, machinery for.	Mar.	14, 1855	III.
13668	Stoddard, J. C.	Muscle, producing, by steam or condensed air.	Oct.	9, 1855	XVIII.
13151	Stoddard, Oren	Planters, corn, to be operated by hand.	June	26, 1855	I.
12656	Stoddard, William	Bedsteads, folding	April	4, 1855	XVII.
12966	Stoddard, David	Valves, cut-off	May	30, 1855	VI.
13236	Stoekel, Andrew	Planos, tables, &c, machine for cutting legs for.	July	10, 1855	XVIII.
13402	Stone, Amasa	Bottles, glass, and similar articles, forming screw- threads, &c., in the necks of.	Aug.	7, 1855	XXII.
12708	Stone, J. M., assignor to Manchester Locomotive Works.	Locomotive-drivers, lathes for turning.	April	10, 1855	II.
13598	Storm, Wm. Mt.	Engines, gas, method of actuating	Sept.	22, 1855	VI.
13660	Storm, Wm. Mt.	Cartridges, fire-extinguishing, applying	Oct.	9, 1855	V.
12355	Storm, Wm. Mt.	Steam-generators.	Feb.	6, 1855	VI.
13276	Stott, John B., and Alexander Ferguson.	Valves, steam-engine, cross-head attachment for working	July	17, 1855	VI.
14002	Stout, Thomas B.	Mills, corn and cob.	Dec.	25, 1855	XIII.
13046	Stow, Oron W.	Metal, sheet, folding-machine	June	13, 1855	II.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12836	Stowell, John .....	Fire-arms .....	May 8, 1855 .....	XIX.
12854	Strait, Hiram .....	Boilers, steam, arrangement of means for freeing from sediment .....	April 4, 1855 .....	VI.
12831	Strange, E., and T. B. Smith .....	Sawing hoops, machine for .....	Sept. 4, 1855 .....	XIV.
12972	Stratton, Richard A. ....	Chairs for dentists' use .....	May 30, 1855 .....	XX.
12973	Street, Chapin .....	Grain-drill .....	May 30, 1855 .....	I.
12863	Street, Elihu .....	Mortising and tenoning .....	Mar. 20, 1855 .....	I V.
12869	Streeter, Abel W. ....	Bits, centre, fastening .....	Jan. 23, 1855 .....	II.
12988	Streeter, Leander R., assignor to Leander R. Streeter and Ira Leonard .....	Amalgamating the precious metals .....	May 30, 1855 .....	IV.
12744	Stryker, John .....	Cultivators .....	April 18, 1855 .....	I.
13723	Stubber, J., and T. Hardin .....	Lamps .....	Oct. 30, 1855 .....	V.
12451	Sturdevant, Lewis G. ....	Gins for ginning cotton, manner of constructing .....	Feb. 28, 1855 .....	Extension. XVIII.
12837	Stull, John .....	Stereoscope case .....	May 8, 1855 .....	II.
12533	Suffern, Andrew J. ....	Rolling railroad rails, machine for .....	Mar. 14, 1855 .....	V.
12259	Sutton, James H. ....	Furnaces, air-heating .....	Jan. 17, 1855 .....	XII.
12280	Sutton, John .....	Lubricator for steam-engines .....	Jan. 23, 1855 .....	XII.
13769	Sutton, John .....	Lubricator for steam-machinery .....	Nov. 6, 1855 .....	XII.
13343	Swan, assignee. (See Dickinson, assignor.) .....	Stone, dressing and carving, machinery for .....	July 24, 1855 .....	XV.
13045	Swan, Elias A., and Dewitt C. Smiley .....	Stave-machine .....	June 13, 1855 .....	XIV.
13237	Swan, George H. ....	Stair, stair .....	July 10, 1855 .....	XIV.
	Swamy, C. M. ....	Stair, stair .....	July 10, 1855 .....	XIV.
	Sweeney & Lacore, assignees. (See Kock, Louis, assignor.) .....	Friction-rollers, adjustable .....	April 10, 1855 .....	IX.
12701	Sweeney, Thomas & John .....	Printing-press .....	Nov. 27, 1855 .....	XVIII.
13957	Sweet, George C. (See Boardman, Byron.) .....	Thread, a single, machine for trebling .....	Sept. 12, 1855 .....	III.
13562	Sweet, S. H., et al. (See Warren, Geo., et al.) .....	Printing-press .....	Nov. 27, 1855 .....	XVIII.
	Swift, C. A. ....	Thread, a single, machine for trebling .....	Sept. 12, 1855 .....	III.
	Swift, Anson A., assignor to himself and Samuel L. Hill .....	Pegging, hand, machines .....	May 30, 1855 .....	XVI.
12985	Swingle, Alfred, assignor to Elmer Townsend .....	Pegging, hand, machines .....	May 30, 1855 .....	XVI.

13474	Swyney, John, assignor to Jno. Swyney and James Dandridge.	Fire-arms, magazine, breech-loading.	Aug. 21, 1855.	XIX.
13149	Sykes, Joseph.	Mandrel-guide, wheelwrights'.	June 26, 1855.	XIV.
12745	Sylla, Philo.	Harvesters, grain and grass.	April 18, 1855.	I.
12348	Taggart, John, assignor to himself and Nehemiah Hunt.	Sawing wedges or shingles, machine for.	May 8, 1855.	XIV.
12987	Taggart, John, assignor to J. Taggart and J. S. Shaler.	Meter, fluid.	May 15, 1855.	XI.
13611	Taggart, John, assignor to himself and Theodore L. Parker.	Legs, artificial.	Sept. 25, 1855.	XX.
13386	Taggart, John, assignor to himself and Vernon Brown.	Stone, channeling, machine for.	Dec. 4, 1855.	XV.
12492	Taggart, Samuel.	Bols, flour, feeding.	Feb. 20, 1855.	XIII.
13925	Talbot, G. H.	Auger-handles.	Dec. 11, 1855.	XIV.
12170	Taplin, John A.	Saw, path-finding, method of hanging a.	Jan. 5, 1855.	XIV.
132	Tarbell & Co. (See Blanchard, A. J., assignor.) Tarbox, James E. (See Keeney, William J.) Tasker, Thomas T.	Furnace of hot-water apparatus, mode of regulating the. Pipes or tubes of lead, tin, and other metallic substances, machinery for making. Ploughs.	May 8, 1855. Sept. 24, 1855. May 8, 1855.	Addn'l improvement. Extension. I.
12338	Taverner, E. C., and O. NeSmith.	Leather-splitting machines, bed-spring of.	Aug. 7, 1855.	XVI.
13407	Tay, John B.	Grain, grass, &c., machines for cutting.	June 26, 1855.	I.
13143	Taylor, Charles.	Water-wheel, bucket for.	July 31, 1855.	XI.
13366	Taylor, C. C.	Piano-forte action.	Dec. 11, 1855.	XVIII.
13924	Taylor, Francis.	Plane, crozing, coopers'.	Oct. 2, 1855.	XIV.
13626	Taylor, Hiram and Jno. C.	Map-heads.	Feb. 30, 1855.	XVII.
12365	Taylor, James A.	Ventilating railroad cars.	Oct. 6, 1855.	V.
13732	Taylor, J. K.	Roofs, plank, for buildings.	June 13, 1855.	IX.
13052	Taylor, Samuel.	Forks for gold-diggers.	Feb. 28, 1855.	I.
12453	Teese, Lewis, & Son.	Boring fence-posts, machine for.	May 1, 1855.	XIV.
12808	Temple, James, assignor to Israel Ward & James Temple.	Tongue, iron, self-adjusting.	Aug. 7, 1855.	X.
13405	Temple, William J.	Brake, self-acting, for vehicles.	June 19, 1855.	X.
13108	Ten Eyck, Peter.	Pin-sticking machine.	May 30, 1855.	II.
12975	Terry, Henry. (See Heck, John M., assignor.)	Pin, sticking, machine for crimping paper for.	Sept. 12, 1855.	II.
13553	Terry, J. B.	Beef-spreader.	Jan. 12, 1855.	XXII.
12922	Teah, Frederick.			



*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12250	Tewkesbury, Abijal R.	Steering apparatus.	Jan. 17, 1855	VII.
3-7	Thatcher, J. M.	Stoves, air-heating	Sept. 12, 1855	Reissue.
13017	Thayer, H. H.	Clay, machines for kneading	June 5, 1855	XV.
13111	Thomas, Charles F.	Rollers, steam	June 19, 1855	VI.
13233	Thomas, Charles F.	Locomotives, means for increasing draughts in	July 10, 1855	VI.
13-32	Thomas, George H.	Evaporating pans, method of inserting tubes in	Nov. 20, 1855	V.
12746	Thomas, John J.	Engines, rotary	April 18, 1855	VI.
12-17	Thomas, Leopold, and James.	Match-machines	Jan. 23, 1855	XIV.
13186	Thomas, Samuel T., (No. 1).	Looms	July 3, 1855	III.
13187	Thomas, Samuel T., (No. 2).	Looms	July 3, 1855	III.
12703	Thomas, William	Cabin-chairs	April 10, 1855	VII.
13936	Thompson, A. & D. (See Barber, D. S.)	Cloaks, cutting	Dec. 11, 1855	XXI.
12733	Thompson, A. S.	Printers' ink, making	April 18, 1855	XVIII.
13925	Thompson, Caleb A.	Potash and soda, preparing	July 24, 1855	IV.
12875	Thompson, George	Boots and shoes, machine for polishing the soles of	May 15, 1855	XVI.
12877	Thompson, J. B. (See Darker, Wm., jr., assignor.)	Metal, machines for planing	April 24, 1855	II.
12767	Thompson, J. H., J. M., and H. Q.	Drippers, oil	Aug. 7, 1855	XII.
13406	Thompson, James M.	Harvesters, grain and grass	Aug. 28, 1855	I.
1-508	Thompson, John	Straw-cutters	Aug. 28, 1855	I.
13509	Thompson, John A.	Furnaces for burning wet fuel	April 10, 1855	V.
12678	Thompson, Moses	Life-preserving seats	Jan. 12, 1855	VII.
12220	Thompson, Nathan, jr.	Boat, collapsible	Aug. 23, 1855	VII.
13510	Thompson, Nathan, jr.	Boots and shoes, pegging, hand-machines for	June 26, 1855	XVI.
13144	Thompson, Reuben H.	Gate, circular, self-operating	June 19, 1855	IX.
13109	Thompson, William	Furnaces for heating wrought-iron wheels for forging	May 1, 1855	V.
12300	Thomson, William R.	Forging, heating wrought-iron wheels for	June 13, 1855	II.
13153	Thomson, William R.	Melodeons, &c., improved swell for	May 22, 1855	XVII.
12938	Thornton, Thos. F., assignor to Prince & Stephen-son.			

13959	Thornton, Thos. F.	Organ-melodeons.	Dec 18, 1855.	XVIII.
13978	Thornton, W. M.	Leather straps, machines for crossing the edges of.	May 16, 1855.	XVI.
13958	Demolno, René Charles.)	Shingle-machines.	Dec. 20, 1855.	XIV.
12142	Tiffany, J., and M. Harris.	Processes for making soap.	Jan. 5, 1855.	IV.
13110	Tieghman, Richard A.	Brick-machine.	June 19, 1855.	XV.
13502	Till, Levi.	Brick-machines.	Aug. 24, 1855.	XV.
13679	Till, Levi.	Looms, templates for.	May 15, 1855.	III.
13880	Tilton, Jeremiah C.	Planing-machines, devices for adjusting.	May 15, 1855.	XIV.
6-7	Titus, William D.	Lanterns.	Jan. 12, 1855.	Design.
13297	Titus, Wm. D. and R. W. Fenwick.	Bridle-bit.	Feb. 13, 1855.	XVI.
13421	Todd, George N.	Water-gate, self-regulating.	Feb. 20, 1855.	XI.
13603	Tolles, Robert B.	Optical instruments.	Sept. 25, 1855.	VIII.
	Tolla, Orrin, and Chauncey E. (See Cowdry, Chauncey.)			
13897	Tolman, C. C., assignor to James Sargent and M. P. Foster.	Gimlet.	Dec. 4, 1855.	XIV.
13718	Tomlinson, O. B.	Cloth, felt, manufacture of ornamental.	June 5, 1855.	III.
13586	Tompkins, C. and John Johnson.	Knitting-machine.	Sept. 18, 1855.	III.
13858	Tompkins, S. E.	Harnesses, metallic saddle-trees for.	Nov. 27, 1855.	XVI.
12229	Tongue, William, assignor to Wm. Tongue and James Buckley.	Looms.	Jan. 12, 1855.	III.
12734	Towers, William H.	Penholder.	April 18, 1855.	XVIII.
13927	Townsend, Elmer. (See Swingle, Alfred.)	Cannon, manufacture of.	Dec. 11, 1855.	XIX.
12221	Tuzer, Guy. (See Rice, A. S., and Guy Tozer.)	Slave-jointer.	Jan. 12, 1855.	XIV.
12399	Treadwell, Daniel.	Valves, steam.	Feb. 13, 1855.	VI.
13589	Treadway, James W.	Valve, regulator, and governor's stem, means of connection between.	Dec. 4, 1855.	VI.
12534	Tremper, John.	Vendicators, apparatus for operating.	Mar. 14, 1855.	V.
12704	Trimble, Isaac P.	Railways, wooden splice-piece for.	April 10, 1855.	IX.
12657	Trimble, J. R.	Grain-cleaner.	April 4, 1855.	XIII.
12420	Tripp, Thomas.	Water-wheel.	Feb. 20, 1855.	XI.
13442	Truap, Thomas.	Locks, gun.	Aug. 14, 1855.	XIX.
12333	Trualey, Michael.	Zinc, white, construction of furnaces for.	Jan. 30, 1855.	IV.
13990	Trotter, Jonathan G.	Blind-fastener.	Dec. 4, 1855.	IX.
	True, Daniel E.			

## Alphabetical List of Patentes—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12809	Tubbs, E. A., assignor to E. A. Tubbs and H. T. Croxon.	Sawing fire-wood, &c, machine for.....	May 1, 1855.....	XIV.
13145	Tuck, Joseph H.....	Packing for stuffing-boxes, &c.....	June 26, 1855.....	VI.
12143	Tucker, Farnham Z.....	Life-preserving rafts.....	Jan. 6, 1855.....	VII.
13198	Tucker, Hiram.....	Bed, spring-bottom.....	July 3, 1855.....	XVII.
12925	Tucker, John.....	Yokes, ox.....	May 22, 1855.....	I.
13278	Tufte, Otis.....	Ships, iron, constructing.....	July 17, 1855.....	VII.
	Tupper, C. W., & <i>et al.</i> (See Bessey, William, assignor.)			
12926	Turner, George.....	Sticks, tapering, mandrel for cutting.....	May 22, 1855.....	XXII.
12539	Turner, Grant B.....	Snut-machines.....	May 8, 1855.....	XIII.
13071	Turner, Joshua, jr., assignor to A. Bennett and W. Covell.	Leather, rolling, machine for.....	June 13, 1855.....	XVI.
12144	Tyer, Henry G., and John Helm.....	India rubber cloth, process of making.....	Jan. 5, 1855.....	IV.
12334	Tyer, Henry G., and John Helm.....	India-rubber cloth, processes for making.....	Jan. 30, 1855.....	IV.
12607	Tyer, Henry G., and John Helm.....	Boots and shoes, manufacture of.....	Mar. 28, 1855.....	XVI.
12977	Tyler, John.....	Water-wheels, curb for.....	May 22, 1855.....	XI.
12564	Uhrly, H., and H. A. Lutgens.....	Valve-gearing, for steam-engines.....	Mar. 20, 1855.....	VI.
	Union India-Rubber Lamp Co. (See Bennett, William, assignor)			
12524	Urran, Frederick W.....	Curtain-rollers.....	Mar. 14, 1855.....	XVII.
13330	Urry, Jesse.....	Harvesters, grain and grass.....	July 24, 1855.....	I.
13239	Ustick, Stephen.....	Brick-presses.....	July 10, 1855.....	XV.
13589	Van John.....	Sieves, cooking.....	Sept. 18, 1855.....	V.
13408	Van Anden, William.....	Spoke-machine.....	Aug. 7, 1855.....	XIV.
13189	Van Benschoten, T. J.....	Collars, horse, blocks.....	July 3, 1855.....	XVI.
	Vander Woerd, Charles. (See Burnett & Vander Woerd)			
13287	Vander Woerd, Charles. (See Burnett, M.)	Water wheel, turbine.....	July 17, 1855.....	XI.
13367	Van De Water, Henry.....	Soap-cutting machines.....	July 31, 1855.....	IV.
13368	Van Haagen, Anton.....	Soap-cutting machines.....	July 31, 1855.....	IV.

13291	Van Hoesen, Levi.....	Apples, paring and alcing, machines for.....	Dec. 4, 1855.....	XVII.
13747	Van Horn, Chester.....	Lathes, slide-rest for.....	April 18, 1855.....	XIV.
13809	Van Horn, R. P.....	Cultivators.....	Mar. 23, 1855.....	I.
13532	Van Horne, J.....	Grain-separators.....	Sept. 4, 1855.....	III.
12565	Van Riper, Lewis.....	Looms.....	Mar. 28, 1855.....	V.
13469	Vanuytsel, Samuel.....	Grate-bars, interlocking.....	Oct. 9, 1855.....	XIII.
13837	Van Vleet, C. W., assignor to Charles Parker.....	Mills for grinding coffee, &c.....	Nov. 20, 1855.....	VII.
13771	Van Zile, Peter, Searles M. Griffin, & J. W. S. Dey.....	Boat, life, sofa.....	Nov. 6, 1855.....	IX.
12525	Vaughan, Edward.....	Stump machine.....	Mar. 14, 1855.....	Design.
690	Vedder, N. S. and E. Ripley, assignors to G. F. Filley, of St. Louis, Mo.....	Stores, for parlor.....	Jan. 23, 1855.....	Design.
689	Vedder, N. S., assignor to G. F. Filley.....	Stores, open-front, for parlor.....	Jan. 23, 1855.....	Design.
13533	Vedder, N. S. (See Ripley, E.).....	Brick-machines.....	Sept. 4, 1855.....	XV.
12801	Victor, Joseph Alexander.....	Projectiles.....	May 1, 1855.....	XIX.
13892	Von Kammerhuber, W. J.....	Quartz crushing machines.....	Dec. 4, 1855.....	II.
706	Vose, Richard.....	Stoves, cooking.....	May 30, 1855.....	Design.
707	Vose, Samuel D., (No. 1).....	Stoves, cooking.....	May 30, 1855.....	Design.
708	Vose, Samuel D., (No. 2).....	Stoves, cooking.....	May 30, 1855.....	Design.
709	Vose, Samuel D., (No. 3).....	Stoves, cooking.....	May 30, 1855.....	Design.
12566	Vose, Samuel D., (No. 4).....	Stoves, parlor.....	May 30, 1855.....	Design.
12566	Vose, William T.....	Pumps.....	Mar. 24, 1855.....	XI.
13240	Vosmus, O. D.....	Stirrups, open.....	July 10, 1855.....	XVI.
13133	Wade, Henry (See Hanfbauer, Jno.).....	Churns.....	June 26, 1855.....	I.
119	Wade, Isaac M.....	Lubricators, steam.....	Mar. 28, 1855.....	Add'l imp't.
12803	Wade, Robert M.....	Lubricator.....	May 1, 1855.....	XII.
13934	Wade, W. W., assignor to himself and Charles Burnham.....	Engines, steam, variable cut-off gear for.....	Dec. 11, 1855.....	VI.
12174	Wadleigh, Warren.....	Forms, irregular, machine for cutting.....	Jan. 5, 1855.....	XIV.
13610	Wagener, D. S.....	Mills, flouring.....	Sept. 25, 1855.....	XIII.
735	Wager, James.....	Stoves, cooking.....	Oct. 16, 1855.....	Design.
736	Wager, James.....	Stoves, cooking.....	Oct. 16, 1855.....	Design.
737	Wager, James.....	Stoves, parlor, plates.....	Oct. 16, 1855.....	Design.
683	Wager, Richmond & Smith.....	Stoves, parlor.....	Jan. 5, 1855.....	Design.
13511	Wait, P. H.....	Forms, irregular, machines for cutting.....	Aug. 24, 1855.....	XIV.
13342	Walcott, Albert.....	Lumber from the log, machine for dressing.....	July 24, 1855.....	XIV.
12610	Walker, Joseph.....	Hulling cotton seeds.....	Mar. 28, 1855.....	I.
	Walker & Sellers. (See Sellers, Wm., and Jas. Walker.).....			

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12208	Wallis, John U.	Paddle-wheels	Jan. 23, 1855	VII.
13190	Wallis, John U.	Paddle-wheels	July 3, 1855	VII.
13245	Walter, Wm. P.	Glass, plate, manufacturing, from cylinders	July 10, 1855	XV.
13513	Walter, Wm. P., and J. Green, assignors to Wm. P. Walter.	Vault-lights	Aug. 28, 1855	IX.
12173	Warburton, Wm. F.	Hats	Jan. 5, 1855	XXI.
12151	Ward, Andrew H., jr., assignor to A. H. Ward, jr., and Kirk Bonitt.	Composition for unhairing hides	Jan. 2, 1855	IV.
12146	Ward, Daniel T.	Sewing-machines	Jan. 5, 1855	III.
12608	Ward, Israel. (See Temple, James, assignor.)	Planters, seed	Mar. 28, 1855	I.
12145	Ward, Myron	Blinds, sheet-iron	Jan. 5, 1855	IX.
13241	Ward, William E.	Bolts, machines for making	July 10, 1855	II.
743	Wardwell, Benjamin	Stoves	Nov. 20, 1855	Design.
703	Wardwell, B. E. R. Barstow, and G. C. Harkness.	Stoves, cooking	May 8, 1855	Design.
13735	Wardwell, C. P. S.	Tenons, double, machine for cutting	Oct. 30, 1855	XIV.
12650	Warlick, Noah	Ploughs	April 4, 1855	I.
12172	Warner, Chapman	Pavements, cast-iron	Jan. 6, 1855	IX.
13035	Warner, Sheldon	Sawing curvilinear, machine	June 13, 1855	XIV.
701	Warren, George, S. H. Swetland, and E. C. Little.	Marble-sawing machine	Nov. 13, 1855	XV.
12526	Warwick, William	Stoves, cooking	May 1, 1855	Design.
13112	Waterhouse, Albert M.	Locks, door	Mar. 14, 1855	II.
13512	Waterhouse, Miles. (See Livingston, J. B.)	Hose-couplings	June 19, 1855	XI.
13512	Waterman, Henry	Reaping and mowing machines	Aug. 28, 1855	I.
13034	Waterman, Nathaniel	Filter, portable floating	June 13, 1855	XI.
13859	Waterman, Nathaniel	Feet-warmers	Nov. 27, 1855	V.
13286	Waters, Charles	Lanterns	July 17, 1855	V.
12345	Waters, Eliza	Boxes, cylindrical	Jan. 30, 1855	XXII.
12567	Watson, Alexander T.	Fire-arms, breech-loading	Mar. 20, 1855	XIX.
13285	Watson, David	Harvesters	July 17, 1855	I.
13443	Watles, Otis B.	Tanning compounds	Aug. 14, 1855	XVI.

13691	Weaver, H. B.	Fire-arms, breech-loading.	Oct. 16, 1855.	XX.
13697	Webb, Charles R.	Wind-mill.	June 13, 1855.	XI.
13674	Webb, John G.	Lamps, arcand.	Oct. 9, 1855.	V.
13748	Webb, William H., jr.	Hoses, metallic.	April 18, 1855.	XXII.
13673	Webber, John K.	Gates, farm, method of operating.	Sept. 9, 1855.	IX.
13604	Webster, Alonzo.	Carriages, hold-back for.	Sept. 25, 1855.	X.
12861	Webster, Benjamin B.	Curtain, spring, rollers.	May 15, 1855.	XVII.
12976	Webster, Harvey, and Alonzo.	Whiffletrees.	May 30, 1855.	X.
12370	Webster, Hazen.	Churns.	Feb. 6, 1855.	I.
13019	Webster, Henry.	Engine, steam, regulators.	June 5, 1855.	VI.
12840	Webster, Joel.	Silvering looking-glasses.	May 8, 1855.	IV.
13609	Webster, R. C. (See Niles, Peter H., assignor.)			
12356	Weed, Samuel S.	Types, printers', machine for making.	Sept. 25, 1855.	XVIII.
13316	Weigle, Joel.	Mill, crushing and grinding.	Feb. 6, 1855.	XIII.
13318	Weimer, Peter L.	Hammers, trip.	Sept. 25, 1855.	II.
13467	Weis, Joseph.	Pumps, suckers for.	Dec. 18, 1855.	XI.
12892	Weiser, David.	Safes, fire-proof, composition for filling in.	May 15, 1855.	V.
12261	Weissenborn, Gustavus.	Boilers, steam, arrangement of filtering apparatus to prevent incrustation in.	Jan. 17, 1855.	VI.
13628	Weissenborn, Gustavus, assignor to Epes W. Sargent.	Filter, thermodynamic.	Oct. 2, 1855.	XI.
13928	Welling, Wm. W.	Bleaching ivory, devices for.	Dec. 11, 1855.	IV.
12177	Wells, Daniel.	Burglars' alarm.	Jan. 5, 1855.	XXII.
12705	Wells, Hiram.	Saw, circular, spindles to yield, device allowing.	April 10, 1855.	XIV.
12295	Wells, Joseph.	Loom.	Jan. 12, 1855.	III.
12568	Wells, Lemuel T.	Printing-press.	Mar. 20, 1855.	XVIII.
13135	Wells, Moses D.	Seeding-machines.	June 26, 1855.	I.
13281	Wells, Moses D.	Churns.	July 17, 1855.	I.
13893	Wells, Moses D.	Seed-sowers, hand.	Dec. 4, 1855.	I.
12131	Wells, Joseph.	Looms.	May 30, 1855.	III.
13672	Welton, Joseph.	Cattle, leading-clasp for.	Oct. 9, 1855.	I.
12224	Wenman & Ransom. (See Ransom & Wenman.)	Lathe for turning fancy handles, &c.	Jan. 12, 1855.	XIV.
12171	Wentworth, Luther.	Leather, compositions for dressing.	Jan. 5, 1855.	XVI.
13733	Werner, Cuno.	Compositions, roofing.	Oct. 30, 1855.	IV.
13770	West, James.	Door-springs.	Nov. 6, 1855.	II.
317	Westcott, Amos.	Horse-power, endless chain.	July 10, 1855.	Release.
13605	Westinghouse, George.	Leather-finishing machines.	Sept. 25, 1855.	XVI.
13555	Weston, Charles, and T. F. and J. W.	Shingle-machines, construction of beds for.	Sept. 12, 1855.	XIV.

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12418	Wetherill, Samuel.....	Zinc white, separating apparatus for.....	Feb. 20, 1855.....	IV.
13306	Wetherill, Samuel.....	Zinc white, processes for making.....	Nov. 13, 1855.....	IV.
12527	Wheatly, George W.....	Eave-gutters of houses.....	Mar. 14, 1855.....	IX.
310	Wheeler, Alonzo, and Alexander F. Wheeler, administrator of Wm. C. Wheeler, deceased.	Horse-power, endless chain.....	May 22, 1855.....	Reissue.
	Wheeler, Alonzo, and Alexander F. Wheeler, administrator of Wm. C. Wheeler, deceased.	Horse-power, endless chain.....	July 3, 1855.....	Extension.
12367	Wheeler, Cyrenus, jr.....	Harvesters, grain and grass.....	Feb. 6, 1855.....	I.
13369	Wheeler, Norman W.....	Valves, steam, method of operating.....	July 31, 1855.....	VI.
722	Wheeler, R., and S. A. Bailey.....	Skoves, cooking.....	Aug. 28, 1855.....	Design.
13230	Wheeler, W. M.....	Water-wheels.....	July 17, 1855.....	XI.
	Wheeler & Wilson Manufacturing Company. (See Smith, E. Harry.)			
13020	Wheelock, Hiram.....	Gas-regulators.....	June 5, 1855.....	V.
14004	Wheelock, J. D.....	Sadiron heaters.....	Dec. 25, 1855.....	XVII.
	Whinfield, Henry. (See Jones, Wm. D.)			
	Whinfield, Henry. (See Jones, Wm. D., assignor.)			
	Whinfield, H. (See Jillson & Whinfield.)			
12928	Whipple, Jonathan, jr.....	Block, nipper, self-acting.....	May 22, 1855.....	XII.
12978	Whipple, Milton D.....	Paper pulp, preparing wood for.....	May 30, 1855.....	III.
	Whipple, Squire.....	Bridges, iron truss, construction of.....	Mar. 26, 1855.....	Extension.
13021	Whipple, William C., and William C. Bowe.....	Melodeons.....	June 5, 1855.....	XVIII.
12706	White, C. N.....	Boring the earth, implement for.....	April 10, 1855.....	IX.
	White & Dickinson. (See Dickinson, J., and O. White.)			
13534	White, George W.....	Pen, fountain.....	Sept. 4, 1855.....	XVIII.
12929	White, Leroy S., and Lewis.....	Telegraphic key apparatus.....	May 22, 1855.....	VIII.
	White, McIntyre & James. (See James, Daniel S., assignor.)			
12528	White, Rollin.....	Fire-arms, breech-loading.....	Mar. 14, 1855.....	XIX.
12529	White, Rollin.....	Fire-arms, breech-loading.....	Mar. 14, 1855.....	XIX.
13643	White, Rollin.....	Fire-arms, repeating.....	April 4, 1855.....	XIX.

12639	White, Rollin.....	Fire-arms, breech-loading.....	April 4, 1855.....	XIX.
12649	White, Rollin.....	Fire-arms, repeating.....	April 4, 1855.....	XIX.
13607	White, William.....	Bedsteads.....	Sept. 25, 1855.....	XVII.
13191	Whitehall, N.....	Ploughs.....	July 3, 1855.....	I.
12763	Whiteley, Abner.....	Harvesters, grain and grass.....	April 4, 1855.....	Release.
12769	Whiteley, Abner.....	Harvesters, and other machines, attaching wheels to.....	April 24, 1855.....	I.
12802	Whiteley, Abner.....	Harvesters.....	April 24, 1855.....	I.
12811	Whiteley, Abner.....	Shafts and pulleys, arranging, at an angle.....	May 1, 1855.....	XII.
13172	Whitney, Henry, Jr.....	Harvesters, grain and grass.....	July 10, 1855.....	I.
12491	Whittaker, Wm. L.....	Inkstand.....	May 8, 1855.....	XVIII.
12535	Whittemore, Amos.....	Looms.....	June 5, 1855.....	III.
	Whittemore & Co. (See Blanchard, A. J., assignor.)	Collars, horse, machines for stuffing.....	Mar. 7, 1855.....	XVI.
	Whorf, Sylvanus H. (See Rice, C., and S. H. Whorf.)	Spike-machine.....	Sept. 4, 1855.....	II.
13807	Wicks, Loren. J. (See Simonton, Thos. C.)	Straw-cutters.....	Nov. 13, 1855.....	I.
12883	Wicks, Robert.....	Furnace grate-bar.....	May 15, 1855.....	V.
13120	Wiesenborn, E.....	Chain-making machine.....	Dec. 11, 1855.....	II.
13553	Wilber, William.....	Grinding cotton and other seeds for their oils.....	Sept. 12, 1855.....	XIII.
13556	Wilber, William.....	Hullers, cotton-seed.....	Sept. 12, 1855.....	I.
13537	Wilber, William.....	Oil, vegetable, steam apparatus for extracting.....	Sept. 12, 1855.....	IV.
14005	Wilber, William.....	Presses, oil, hydraulic.....	Dec. 25, 1855.....	XII.
13731	Wilder, Aretus A.....	Clap-board machine.....	Oct. 30, 1855.....	XIV.
12386	Wilder, Salem.....	Sewing-machines, waxing thread on.....	Jan. 30, 1855.....	III.
13134	Wiler, Wm., and Lucien Moss.....	Gas-lighter.....	June 26, 1855.....	V.
12646	Wilhelm, Charles and Anna C.....	Lamp-shades, protector for.....	April 4, 1855.....	V.
12804	Wilkinson, Jonathan.....	Cars, self-loading and unloading.....	May 1, 1855.....	X.
13283	Willard, Edward D.....	Gas-burning gridirons.....	July 17, 1855.....	V.
12651	Williams, C.....	Excavating-machine.....	April 4, 1855.....	IX.
13282	Williams, Edwin.....	Excavating-machine.....	July 17, 1855.....	IX.
12979	Williams, E. D.....	Vehicles.....	May 30, 1855.....	X.
12294	Williams, Isaac, and Isaac W. Bausman.....	Planters, cotton-seed.....	Jan. 23, 1855.....	I.
13341	Williams, John.....	Clocks, calendar.....	July 24, 1855.....	VIII.
12495	Williams, John.....	Engines, locomotive, arrangement of exhaust-pipes in.....	Mar. 7, 1855.....	VI.
12308	Williams, J. M.....	Butter workers.....	Feb. 6, 1855.....	I.
12400	Williams, J. N.....	Cars, railroad, head-supporters for.....	Feb. 13, 1855.....	X.
	Williams, S. G. (See Palmer, Aaron.)			



*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
12569	Willia, Oscar.....	Water-wheel, centrifugal.....	Mar. 20, 1855.....	XI.
12496	Willia, W. W.....	Stumps, mode of extracting.....	Mar. 7, 1855.....	IX.
13192	Willison, Geo. B.....	Flour, cooling and drying.....	July 3, 1855.....	XIII.
12662	Willmarth, John T.....	Bolta, dies for making.....	Jan. 17, 1855.....	II.
12735	Willmarth, John T.....	Dies for bolt-forging machines.....	April 18, 1855.....	II.
13444	Willmet, S. R.....	Sawing-machine, portable steam.....	Aug. 14, 1855.....	XIV.
12342	Wilson, Andrew P.....	Shingle-machine.....	May 8, 1855.....	XIV.
12419	Wilson, C.....	Griddle.....	Feb. 20, 1855.....	XVII.
12980	Wilson, C., and Wm. Moore, jr.....	Mowing-machines.....	May 30, 1855.....	I.
13328	Wilson, C. A.....	Valves, oscillating, and gearing for pumping engines.....	July 29, 1855.....	VI.
13690	Wilson, Edwin.....	Carriages, extension reach for.....	Oct. 16, 1855.....	X.
731	Wilson, J. H.....	Monuments, cast-iron.....	Sept. 18, 1855.....	Design.
13194	Wilson, Robert.....	Stoves.....	July 3, 1855.....	V.
13193	Wilson, Robert.....	Boilers, steam, apparatus for heating feed-water to.....	July 3, 1855.....	VI.
12977	Wilson, Wm. D.....	Corn-grinder and crusher.....	May 30, 1855.....	XIII.
13073	Wimley, John M., assignor to J. A. B. Shaw.....	Boots and shoes, attaching gutta percha soles to.....	June 13, 1855.....	XVI.
13576	Winder, Daniel K.....	Printing-press, card.....	Sept. 18, 1855.....	XVIII.
13671	Winder, Daniel K.....	Printing-press, card, inking apparatus for.....	Oct. 9, 1855.....	XVIII.
13658	Winder, Daniel K.....	Gates, device in opening and closing.....	Oct. 16, 1855.....	XVIII.
13445	Winegar, Caleb.....	Water-elevator.....	Aug. 14, 1855.....	IX.
13446	Winegar, Caleb.....	Gates, method of closing and opening.....	Aug. 14, 1855.....	XI.
12930	Winegar, Caleb.....	Weavers' harness, machines for making.....	May 22, 1855.....	IX.
12175	Winsor, Joseph S.....	Decks, writing.....	Jan. 18, 1855.....	III.
13371	Wolf, William G.....	Sawing a log by its own weight, method of.....	July 31, 1855.....	XXII.
12843	Wolf, Francis A.....	Paper-bags, machine for making.....	May 8, 1855.....	XIX.
12932	Wolle, Francis.....	Ordnance.....	May 30, 1855.....	XVIII.
12522	Wolter Christoph.....	Looms.....	Mar. 14, 1855.....	XIX.
13234	Wood, Edward.....	Engines, oscillating.....	July 17, 1855.....	III.
12999	Wood, Geo. F.....	Engines, oscillating.....	Jan. 23, 1855.....	VI.
	Wood & Elder. (See Elder, John A., and Ephraim Wood.)			
	Wood & Hill. (See Hill & Wood.)			

12576	Wood, Walter A.	Harvesters, grain and grass	Mar. 20, 1855.	I.
12596	Woodbury, Jas A.	Planing-machines.	Nov. 13, 1855.	XIV.
12554	Woodcock, O. S.	Saws, reciprocating, method of operating	Sept. 12, 1855.	XIV.
12497	Woodcock, Virgil	Decks, arrangement of, in school-rooms.	Mar. 7, 1855.	XXII.
12652	Woodruff, Enos	Gates, mechanism by which approaching vehicles open and close.	April 4, 1855.	IX.
12844	Woodruff, G. B., and J. N. Palmer	Gas-regulators	May 8, 1855.	V.
13195	Woodruff, Jerome B.	Sewing-machines	July 3, 1855.	III.
13242	Woodruff, Joseph	Sewing-machines	July 10, 1855.	III.
13711	Woods, S. A., and S. S. Gray. (See Gray, Solomon S., assignor.)	Steam-pressure regulators, elastic diaphragm.	Oct. 23, 1855.	VI.
13479	Woodward, John	Yokes, horse	Aug. 21, 1855.	I.
12859	Woodworth, Arad, 3d.	Spinning, machinery for	May 15, 1855.	III.
750	Woolman, E.	Hinges, strap	Dec. 11, 1855.	Design.
12805	Wooten, John E.	Locomotives, arrangement of means for regulating the discharge of exhaust steam in.	May 1, 1855.	VI.
13113	Worden, Alva.	Stove-pipes, joints for	June 19, 1855.	V.
13670	Worden, George W.	Sawing-machines, gauge attachment for	Oct. 9, 1855.	XIV.
13309	Wortendyke, C. R.	Ice from rivers, &c., machinery for raising	Nov. 13, 1855.	XXII.
13279	Worthen, Wm. E.	Doors and windows, metallic blinds for	July 17, 1855.	IX.
13320	Worthington, Henry R.	Meter, water	July 24, 1855.	XI.
13370	Worthington, Henry R.	Pumps, steam, direct-acting hydraulic.	July 31, 1855.	XI.
13894	Worthley, M. (See Young, Alonso E., assignor.)	Cotton-seed, preparing, for planting, machines for	Dec. 4, 1855.	I.
13688	Wright, Benjamin. (See Bean, John.)	Grain-separators	Oct. 16, 1855.	I.
13930	Wright, Benjamin, and John Bean	Pumps, rotary	Dec. 11, 1855.	XI.
12176	Wright, C. D.	Sawing-machine.	Jan. 5, 1855.	XIV.
12263	Wright, Lyander	Brakes, steam, mode of connecting pipes for	Jan. 17, 1855.	X.
12263	Wright, Wendell	Pumps, chain.	April 4, 1855.	XI.
12645	Wyckoff, Arcalons	Boring-machine	Sept. 25, 1855.	XIV.
13606	Wyckoff, A., and E. R. Morrison.	Spikes	May 24, 1855.	II.
12931	Wygant, J. H.	Planters, seed	Oct. 16, 1855.	I.
13694	Wykoop, Francis G., assignor to Henry L. Edson.	Looks, bank.	May 22, 1855.	II.
12932	Yale, Linus			

*Alphabetical List of Patentees—Continued.*

No.	Name of patentee.	Invention or discovery.	Date.	Class.
13712	Yard, George H.	Whiffletrees	Oct. 23, 1855.	X.
	Yearsley, Pascal. (See Stengce, Philip.)			
12571	Yost, George W. N.	Cultivator	Mar. 20, 1855.	I.
13372	Yost, Samuel M.	Washing-machines	July 31, 1855.	XVII.
13735	Yothers, John W.	Bedstead-fastenings	Oct. 30, 1855.	XVII.
13473	Young, Alonzo E., assignor to himself and M. Worthley.	Door-knob	Aug. 21, 1855.	II.
13343	Young, John, of C.	Boring posts and pointing rails, machine for	July 10, 1855.	XIV.
13383	Young, Louis.	Measuring-wheels, revolving	Nov. 20, 1855.	VIII.
12452	Young, Wm. L.	Barrel heads, machine for cutting	Feb. 28, 1855.	XIV.
12337	Youngs, Pinney.	Sawing-machines	Jan. 30, 1855.	XIV.
330	Youngs, Pinney	Sawing lumber	Oct. 2, 1855.	Reissue.
12223	Yulce, John L.	Mills, flouring	Jan. 12, 1855.	XIII.
12815	Zahn, William H., assignor to F. Reuter	Cord, plating and twisting	May 8, 1855.	III.
12611	Zane, William P.	Cultivators	Mar. 29, 1855.	I.
13023	Zenigert, G. W.	Boot-cripping machines	June 25, 1855.	XVI.
	Zoiner, P. W. (See Harris, C.)			
	Zoiner, P. W. (See Harris, C., and P. W. Zoiner, assignors to A. Bradley.)			
	Zoiner, P. W. (See Harris, C., and P. W. Zoiner.			

CLASSIFIED LIST OF PATENTS GRANTED DURING THE YEAR 1855, WITH THE NAMES OF PATENTEES, PLACES OF RESIDENCE,  
AND DATE OF PATENTS.

CLASS I.—AGRICULTURE, including instruments and operations.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13672	Cattle, leading clasp for.....	Joseph Welton.....	Waterbury, Conn.....	Oct. 9, 1855.
13127	Churns.....	Ezekiel Gore.....	Bennington, Vt.....	Jan. 2, 1855.
12366	Churns.....	J. W. C. Williams.....	Blanchester, Ohio.....	Feb. 6, 1855.
12370	Churns.....	Hazen Webster.....	Odenaburg, N. Y.....	Feb. 6, 1855.
12377	Churns.....	Edwin B. Clement.....	Barnet, Vt.....	Feb. 13, 1855.
13133	Churns.....	Isaac M. Wade.....	Clinton, Mich.....	June 26, 1855.
13354	Churns.....	Moses D. Wells.....	Morgantown, Va.....	July 17, 1855.
13421	Churns.....	Jacob Boyers.....	Granville, Va.....	Aug. 14, 1855.
13638	Churns.....	John G. Dungan.....	Steubenville, Ohio.....	Oct. 9, 1855.
12686	Churns.....	Lewis P. Pease.....	Mount Carmel, Ill.....	Oct. 16, 1855.
12314	Clover-huller.....	Jonathan Hibbs.....	Tullytown, Pa.....	Jan. 30, 1855.
12372	Clover-hullers.....	James Allen.....	Treesa's Store, Ohio.....	Feb. 13, 1855.
12492	Clover-seed, hulling and cleaning.....	Martin H. Mansfield.....	Ashland, Ohio.....	Feb. 27, 1855.
12154	Corn-shellers.....	Jeremiah P. Smith.....	Hummelstown, Pa.....	Feb. 27, 1855.
13122	Corn-shellers.....	A. A. C. N. Clow.....	Port Byron, N. Y.....	June 26, 1855.
13182	Corn, machine for shucking and shelling.....	John J. Rollow.....	Fredricksburg, Va.....	July 3, 1855.
13634	Corn-sheller.....	Charles Bishop.....	Norwalk, Ohio.....	Oct. 9, 1855.
13640	Corn-shellers.....	Stephen Elliott.....	Wayne county, Ia.....	Oct. 9, 1855.
13912	Corn-shellers.....	Jeremiah P. Smith.....	Hummelstown, Pa.....	Dec. 11, 1855.
13922	Corn-shellers.....	James J. Johnston.....	Alleghany City, Pa.....	Dec. 11, 1855.
13997	Corn-shellers.....	James Robb.....	Lewistown, Pa.....	Dec. 25, 1855.
13436	Cotton-stalks, machine for gathering.....	Richard Ray.....	Louisport, Ky.....	Aug. 14, 1855.
13595	Cotton-stalks, standing machines for cutting.....	J. Bowerman.....	Detroit, Mich.....	Aug. 28, 1855.
13533	Cotton-stalks, standing machines for cutting.....	J. W. Bocage.....	Cypress Mills, Ark.....	Sept. 11, 1855.
13577	Cotton-pickers, hand.....	George A. Howe.....	Worcester county, Mass.....	Dec. 4, 1855.
13594	Cotton-seed, preparing for planting, machines for.....	R. C. Menn.....	Covington, Ky.....	Dec. 4, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12163	Cultivators.....	John Inel.....	Liberty, Ia.....	Jan. 2, 1855.
12332	Cultivators, teeth.....	Joseph Stockdale.....	Ypsilanti, Mich.....	Jan. 30, 1855.
12428	Cultivators, hand.....	Jonathan A. Robinson.....	Poplin, N. H.....	Feb. 20, 1855.
12478	Cultivators, hand.....	Nehemiah B. Chase and Chauncey W. Saunders.....	Wilkinsonville, Mass.....	Mar. 6, 1855.
12536	Cultivators.....	Samuel A. Knox, assignor to Ruggles, Nurse, Mason, & Co.....	Worcester, Mass.....	Mar. 13, 1855.
12571	Cultivators.....	George W. N. Yost.....	Port Gibson, Miss.....	Mar. 20, 1855.
12589	Cultivators.....	Hervey D. Ganse.....	Freehold, N. J.....	Mar. 27, 1855.
12609	Cultivators.....	R. P. Vanhorn.....	Jacksontown, Ohio.....	Mar. 27, 1855.
12611	Cultivators.....	William F. Zane.....	Woolwich, N. J.....	Mar. 27, 1855.
12653	Cultivators.....	F. L. Smithson.....	Mecklenburg county, Va.....	April 3, 1855.
12744	Cultivators.....	John Stryker.....	Six-mile Run, N. Y.....	April 17, 1855.
13062	Drills, seed. (See Seeding).....	James Selby.....	Lancaster, Ohio.....	June 19, 1855.
	Fans, wheat.....	Joseph Montgomery.....	Lancaster, Pa.....	June 12, 1855.
13063	Forks for gold-diggers.....	James Teese & Son.....	Baltimore, Md.....	Feb. 27, 1855; antedated
13065	Grain-cleaner. (See Class XIII.)		San Francisco, Cal.....	Nov. 27, 1854.
13073	Grain-cleaning machines. (See Class XIII.)			
13073	Grain-drills.....			
	Grain, drying, apparatus for. (See Class V.)	Chapin Street.....	Barre Centre, N. Y.....	May 29, 1855.
13143	Grain, grass, &c., machines for cutting.....	Charles Taylor.....	South Pittsburg, Pa.....	June 26, 1855.
13532	Grain separators.....	J. Van Horne.....	Macquolia, Ill.....	Sept. 4, 1855.
13644	Grain separators.....	Peter Geiser.....	Smithsburg, Md.....	Oct. 9, 1855.
13688	Grain, threshers and cleaners of. (See Class XIII.)	Benj. Wright and John Bean.....	Hudson, Mich.....	Oct. 16, 1855.
19415	Harrows.....	Daniel Haldeman.....	Morgantown, Va.....	Feb. 20, 1855.
12659	Harrows.....	Charles Clarendi, assignor to C. Clarendi and George P. Field.....	New York, N. Y.....	April 3, 1855.
12667	Harrows, rotary.....	Lyman Brabard and Levi Newton.....	Attica, N. Y.....	April 10, 1855.

12957	Harrows .....	William Gourlay .....	White Post, Va. ....	July 17, 1855.
13121	Harvesters, grain and grass .....	John Brown and Stephen S. Bartlett. ....	Woonsocket, R. I. ....	Jan. 9, 1855.
13123	Harvesters, grain and grass .....	Marshall Burnett & Chas. Vander Weerd. ....	Boston, Mass. ....	Jan. 9, 1855.
12915	Harvesters, grain .....	John E. Newcomb. ....	Whitehall, N. Y. ....	Jan. 9, 1855.
12952	Harvesters, grain and grass .....	O. B. Judd .....	Little Falls, N. Y. ....	Jan. 16, 1855.
12923	Harvesters, grass, construction of the frame of .....	Aaron Palmer. ....	Brookport, N. Y. ....	Jan. 30, 1855.
12927	Harvester cutters .....	David Russell. ....	Drewensburg, Ind. ....	Jan. 30, 1855.
12939	Harvesters, grain, delivering apparatus of .....	Edwin A. Morrison, assignor to E. A. and R. J. Morrison. ....	Laurenceville, Va. ....	Jan. 30, 1855.
12963	Harvesters, grass .....	James H. Maydole and A. W. Morse .....	Richmond, Va. ....	Feb. 6, 1855.
12967	Harvesters, grain and grass .....	Cyrus Wheeler, Jr. ....	Eaton, N. Y. ....	Feb. 6, 1855.
12993	Harvesters, grass .....	Robert J. Morrison, assignor to R. J. & E. A. Morrison. ....	Venice, N. Y. ....	Feb. 13, 1855.
12963	Harvesters (mowing) .....	Flak Russell. ....	Richmond, Va. ....	Feb. 27, 1855.
12499	Harvesters, grain and grass .....	John H. Manny. ....	Boston, Mass. ....	Mar. 6, 1855.
12959	Harvesters (mowing) .....	Henry Marcellus. ....	Rockford, Ill. ....	Mar. 20, 1855.
12570	Harvesters, grain and grass .....	Flak Russell. ....	Amsterdam, N. Y. ....	Mar. 20, 1855.
12584	Harvesters, grain and grass .....	Walker A. Wood. ....	Hoodack Falls, N. Y. ....	Mar. 27, 1855.
12714	Harvesters, grain and grass .....	A. Dietz and J. G. Dunham. ....	Barleau, N. Y. ....	Jan. 2, 1855.
12721	Harvesters, grain and grass .....	Jarvis Case .....	Springfield, Ohio. ....	April 17, 1855.
12745	Harvesters, grain and grass .....	Ellakim B. Forbush .....	Buffalo, N. Y. ....	April 17, 1855.
12756	Harvesters, grain, platforms of .....	Philo Sylla .....	Elgin, Ill. ....	April 17, 1855.
12768	Harvesters and other machines, attaching wheels to .....	Searum Atkins .....	Chicago, Ill. ....	April 24, 1855.
12769	Harvesters .....	Abner Whiteley .....	Springfield, Ohio. ....	April 24, 1855.
12924	Harvesters, grain .....	Abner Whiteley .....	Springfield, Ohio. ....	April 24, 1855.
12925	Harvesters, grain and grass .....	T. N. Lepton .....	Winchester, Va. ....	May 8, 1855.
12988	Harvesters, grain .....	John H. Manny .....	Rockford, Ill. ....	May 8, 1855.
12907	Harvesters, grain .....	Benj. S. Nicholson, administrator of John T. Nicholson, deceased. ....	Davidsonville, Md. ....	May 15, 1855.
12963	Harvesters, grass .....	Jonathan Haines .....	Pekin, Ill. ....	May 22, 1855.
12980	Harvesters (mowing) .....	Francis Peabody .....	Salom, Mass. ....	May 29, 1855.
12989	Harvesters (reaping and mowing) .....	C. Wilson and Wm. Moore, Jr. ....	Yardleyville, Pa. ....	May 29, 1855.
13004	Harvesters, grain and grass .....	Andrew Dietz and John G. Dunham. ....	Barleau, N. Y. ....	June 5, 1855.
13102	Harvester rates, &c., producing intermittent acceleration of motion in .....	M. G. Hubbard .....	New York, N. Y. ....	June 5, 1855.
		John Richardson .....	Buckeytown, Md. ....	June 19, 1855.

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## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13147	Harvesters, attaching the rakers' seat to	Stephen Hull.....	Poughkeepsie, N. Y.....	June 26, 1855.
13149	Harvesters, cutters of.....	John H. Manny.....	Rockford, Ill.....	June 26, 1855.
13150	Harvesters, guard-fingers of.....	John H. Manny.....	Rockford, Ill.....	June 26, 1855.
13159	Harvester reels.....	Gardner A. Bruce.....	Mechanicsburgh, Ill.....	July 3, 1855.
13160	Harvesters, grain and grass.....	Sylvester Colburn.....	Ansonia, Conn.....	July 3, 1855.
13173	Harvesters, grain and grass.....	Wm. H. Hovey.....	Springfield, Mass.....	July 3, 1855.
13176	Harvesters, attaching the connecting bar to the cutters of.....	James and Hyle Little.....	Princeton, Ind.....	July 3, 1855.
13181	Harvesters (mowing).....	Samuel Rockafellow.....	Coatsville, Pa.....	July 3, 1855.
13205	Harvesters, method of raising and lower- ing the cutters of.....	Jonathan F. Barrett.....	North Granville, N. Y.....	July 10, 1855.
13226	Harvesters.....	J. J. Hite, assignor to W. F. Pagett.....	White Post, Va.....	July 10, 1855.
13246	Harvesters, grain and grass.....	Abner Whiteley.....	Springfield, Ohio.....	July 10, 1855.
13245	Harvesters.....	David Watson.....	Petersburg, Va.....	July 17, 1855.
13330	Harvesters, grain and grass.....	Jesse Urmy.....	Wilmington, Del.....	July 24, 1855.
13433	Harvesters, cutting apparatus of.....	Robert J. Morrison.....	Richmond, Va.....	Aug. 14, 1855.
13438	Harvesters.....	Flak Russell.....	Boston, Mass.....	Aug. 14, 1855.
13480	Harvesters.....	Charles Bradfield.....	Philadelphia, Pa.....	Aug. 21, 1855.
13504	Harvesters from reapers to mowers, and vice versa, mechanism for changing.....	Robert Beas.....	Johnsville, Bucks county, Pa.....	Aug. 28, 1855.
13508	Harvesters, grain and grass.....	John Thompson.....	Clifton, N. Y.....	Aug. 28, 1855.
13512	Harvesters, reaping and mowing.....	Henry Waterman.....	Williamsburg, N. Y.....	Aug. 28, 1855.
13517	Harvesters, mowing.....	Collins B. Brown.....	Alton, Ill.....	Sept. 4, 1855.
13523	Harvesters, grass.....	Jonathan Haines.....	Pekin, Ill.....	Sept. 4, 1855.
13524	Harvesters.....	A. E. Kroger.....	Norwalk, Conn.....	Sept. 4, 1855.
13545	Harvesting machines.....	John E. Heath.....	Geneva, Ohio.....	Sept. 11, 1855.
13565	Harvesters, mowing.....	William Burgess.....	London, Eng.....	Sept. 18, 1855.
13928	Harvesting machines.....	John Reilly.....	Hart Prairie, Wis.....	England, Aug. 16, 1854.
13933	Harvester, rakers'.....	S. Haggard and George Bull, assignors to Bull, Haggard & Newteter.....	Bloomington, Ill.....	Nov. 20, 1855.
12263	Hay-making machine.....	George A. Brown.....	Middletown, R. I.....	Dec. 11, 1855.
				Jan. 23, 1855.

12724	Hay-making machine	Francis Peabody	Salem, Mass.	April 17, 1855.
13008	Hay, machines for raking and loading	John K. Harris	Allenaville, Ind.	Dec. 11, 1855
13460	Hemp-cutters	J. L. Hardeman	Arrow Rock, Mo.	Aug. 21, 1855.
12474	Hop-frames	Thomas D. Aylesworth	Frankfort, N. Y.	Feb. 13, 1855.
12614	Hulling cotton-seeds	Joseph Walker	Dover, Eng.	Mar. 27, 1855. Patented in England July 20, 1854.
12008	Hullers of buckwheat	Chase B. Horton	Elmira, N. Y.	May 22, 1855.
13566	Hullers, cotton-seed	William Wilber	New Orleans, La.	Sept. 11, 1855.
13713	Hulling rice, machines	Robert and John E. Anderson	Brooklyn, N. Y.	Oct. 30, 1855.
13992	Hulling-machines	Charles Miller	Carroll, Pa.	Dec. 25, 1855.
12508	Lime-spreaders	H. Ludington and S. R. Lupton	Addison, Pa.	Mar. 13, 1855.
13480	Manure and oil, treating fish for	René Charles Demolion and George Alexander Chas. Thurneyssen	Paris, France	Mar. 6, 1855. Patented in France, Jan. 13, 1851.
12152	Planters, seed	Alexander Anderson	Markham, York county, Canada.	Jan. 2, 1855.
12231	Planters, seed	Jarvis Case	Springfield, Ohio	Jan. 16, 1855.
12256	Planters, seed	Elijah Morgan	Morgantown, Va.	Jan. 16, 1855.
12260	Planters, seed	Stephen L. Stockstill and Peter H. Humes	Brandt, Ohio	Jan. 16, 1855.
12294	Planters, cotton-seed	Isaac Williams and Isaac W. Bauman	Pittsburg, Pa.	Jan. 23, 1855.
12307	Planters, seed	John Blackwood	Lithopolis, Ohio	Jan. 30, 1855.
12308	Planters, seed	Job Brown	Lawn Bridge, Ill.	Jan. 30, 1855.
12447	Planters, seed	Robert Romaine	Montreal, L. Canada, residing at Kelvedon, Eng.	Feb. 27, 1855.
12465	Planters, seed	Andrew J. Barnhart	Schoolcraft, Mich.	Feb. 27, 1855.
12534	Planters, seed	Ebenezer Morse	Walpole, N. H.	Mar. 20, 1855.
12537	Planters, seed	Daniel H. Phillips	Greenville, Ill.	Mar. 20, 1855.
12561	Planters, seed	Benjamin M. Snell	Hancock, Md.	Mar. 20, 1855.
12603	Planters, seed	Hiram Moore	Climax, Mich.	Mar. 27, 1855.
12608	Planters, seed	Myron Ward	Owego, N. Y.	Mar. 27, 1855.
12618	Planters seed	Chester B. and Benjamin S. Borden, and Aaron R. McLean	West Dresden, N. Y.	April 3, 1855.
12641	Planters, seed	Ives W. McGaffey	Syracuse, N. Y.	April 3, 1855.
12672	Planters, seed	Jason W. Corey	Crawfordsville, Ind.	April 10, 1855.
12783	Planters, corn	Presley Raines	London, Ohio	May 1, 1855.
12811	Planters, seed	George W. Brown	Galesburg, Ill.	May 8, 1855.
12867	Planters, cotton-seed	A. H. Morsell	Marlen, Texas	May 8, 1855.
12885	Planters, seed	Lewis W. Colver	Louisville, Ky.	May 22, 1855.
12924	Planters, seed	E. M. Stevens and Joseph B. Crosby, and Joseph W. Pearson	Boston, Mass.	May 22, 1855.
12958	Planters, seed	Thomas S. Minnis	Winchester, Mass.	May 24, 1855.
			Meadville, Pa.	May 29, 1855.



## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12990	Planters, seed .....	Lucian A. Butts .....	Cuba, N. Y. ....	June 5, 1855.
12993	Planters, seed .....	Charles H. Dana .....	West Lebanon, N. H. ....	June 5, 1855.
13077	Planters, corn .....	Uriah Beebe .....	Oakland, Mich. ....	June 19, 1855.
13151	Planters, corn, to be operated by hand ..	Oren Stoddard .....	Busti, N. Y. ....	June 26, 1855.
13185	Planters, corn .....	William Stenson .....	West Greenville, Pa. ....	July 3, 1855.
13326	Planters, seed .....	P. Seymour .....	Bloomfield, N. Y. ....	July 24, 1855.
13387	Planters, corn .....	R. W. Fenwick and R. Bocklen .....	Brooklyn, N. Y. ....	Aug. 7, 1855.
13401	Planters, seed .....	S. G. Randall and J. H. Jones .....	Rockton, Ill. ....	Aug. 7, 1855.
13419	Planters, corn .....	A. J. Barnhart .....	Schoolcraft, Mich. ....	Aug. 14, 1855.
13551	Planters, seed .....	F. Plummer and G. B. Rollins .....	Manchester, Ind. ....	Sept. 11, 1855.
13633	Planters, seed .....	E. McCormick .....	Connellsville, Pa. ....	Oct. 16, 1855.
13694	Planters, seed .....	Francis G. Wynkoop, assignor to Henry L. Edeon .....	Corning, N. Y. ....	Oct. 16, 1855.
13706	Planters, seed .....	Daniel B. Neal .....	Mount Gilead, Ohio .....	Oct. 23, 1855.
13794	Planters, corn .....	Thomas E. Markille .....	Winchester, Ill. ....	Nov. 13, 1855.
13820	Planters, hand seed .....	D. W. Hughes .....	New London, Mo. ....	Nov. 20, 1855.
14002	Planters, hand seed .....	Ancl Stickney .....	Concord, N. H. ....	Dec. 25, 1855.
12241	Ploughs .....	Arnton Smith .....	Scottville, Ill. ....	Jan. 16, 1855.
12310	Ploughs .....	Alfred Doe .....	Concord, N. H. ....	Jan. 30, 1855.
12381	Ploughs .....	George Esterly .....	Heart Prairie, Wis. ....	Feb. 13, 1855.
12387	Ploughs, rotary .....	John W. Haggard and George Bull .....	Bloomington, Ill. ....	Feb. 13, 1855.
12393	Ploughs .....	Ira Reynolds .....	Republic, Ohio .....	Feb. 13, 1855.
12465	Ploughs, spade .....	David Russell .....	Brewersburg, Ind. ....	Feb. 27, 1855.
12627	Ploughs .....	Thomas J. Hall .....	Tawakana Hills, Texas .....	April 3, 1855.
12650	Ploughs .....	Noah Warlick .....	Lafayette, Ala. ....	April 3, 1855.
12791	Ploughs, gang .....	Thomas J. Hall .....	Tawakana Hills, Texas .....	May 1, 1855.
12838	Ploughs .....	E. C. Tavenner and O. Nesmith .....	Hamilton, Va. ....	May 8, 1855.
13082	Ploughs .....	L. G. Evans .....	Spring Hill, Ala. ....	June 19, 1855.
13191	Ploughs .....	N. Whitehall .....	Attica, Ind. ....	July 3, 1855.
13228	Ploughs, attaching cast point to steel, mould boards of .....	A. and S. Peacock .....	Cincinnati, Ohio .....	July 10, 1855.
13493	Ploughs .....	John L. Gill .....	Columbus, Ohio .....	Aug. 28, 1855.

13653	Ploughs.....	Harrison Norton.....	Farmington, Me.....	Oct. 9, 1855.
13655	Plough mould-boards, making.....	T. A. Chandler.....	Rockford, Ill.....	Dec. 4, 1855.
13652	Potato-digger.....	A. A. Marcellus.....	New York, N. Y.....	Nov. 20, 1855.
12169	Rakes.....	Emile Sirret.....	Buffalo, N. Y.....	Jan. 2, 1855.
12336	Rakes, garden.....	S. N. and W. F. Stillman.....	Leonardville, N. Y.....	Feb. 13, 1855.
12647	Rakes and elevators.....	Alexander H. Gaston and Joseph Smith.....	Near Sunbury, Ohio.....	Mar. 20, 1855.
13596	Rakes for reaping-machines.....	Thomas N. Lupton.....	Winchester, Va.....	Sept. 25, 1855.
12632	Rakes and hay elevators.....	William J. Keeney and James R. Tarbox.....	Florence, Ind.....	April 3, 1855.
12750	Rakes.....	Henry Chatfield, assignor to Henry Chatfield and T. L. Snyder.....	Waterbury, Conn.....	April 17, 1855.
13490	Rakes, harvester.....	Oliver C. Green.....	Belleville, Ill.....	Aug. 28, 1855.
13033	Scythes to snath, fastening.....	William P. Greenleaf.....	Washington, N. H.....	June 12, 1855.
13496	Sythe fastening.....	Benjamin F. Joelyn.....	Worcester, Mass.....	Aug. 28, 1855.
13697	Sythe fastenings.....	Cyrus Clapp.....	Montague, Mass.....	Oct. 23, 1855.
13105	Seeding (seed-drill).....	James Selby.....	Lancaster, Ohio.....	June 13, 1855.
13135	Seeding-machines.....	Moses D. Wells.....	Morgantown, Va.....	June 26, 1855.
13373	Seeding-machines.....	Lucien N. Bigelow.....	Cuba, N. Y.....	July 31, 1855.
13530	Seeding-machines.....	C. and G. Stephenson.....	Plainfield, Mass.....	Sept. 4, 1855.
13664	Seeding-machines.....	H. R. Smith.....	Massena, N. Y.....	Oct. 9, 1855.
13781	Seeding-machines.....	E. D. Curtis.....	Mount Morris, N. Y.....	Nov. 13, 1855.
13693	Seed-sowers, hand.....	Moses D. Wells.....	Morgantown, Pa.....	Dec. 4, 1855.
13986	Seeding-machines.....	Reuben Hurd.....	Spring Hill, Ill.....	Dec. 25, 1855.
12760	Shearing sheep, implement for.....	Palmer Lancaster.....	Burr Oak, Mich.....	April 24, 1855.
12341	Snut-machines.....	John Bean and Benjamin Wright.....	Hudson, Mich.....	Feb. 6, 1855.
12254	Straw-cutters.....	John A. Pitts.....	Buffalo, N. Y.....	Jan. 16, 1855.
12331	Straw-cutters.....	George L. Squire.....	Chicopee Falls, Mass.....	Jan. 30, 1855.
12407	Straw-cutters.....	James H. Bennett.....	Bennington, Vt.....	Feb. 20, 1855.
12653	Straw-cutters.....	Walter Lackey.....	Worcester, Mass.....	April 10, 1855.
12694	Straw-cutters.....	Ira Rose.....	Akron, Ohio.....	April 10, 1855.
12696	Straw-cutters.....	David Russell.....	Drewsbrough, Ind.....	April 10, 1855.
12699	Straw-cutters.....	Thos. C. Simonton and Loren J. Wicks.....	Pateron, N. J.....	April 10, 1855.
12974	Straw-cutters.....	Francis Fitzpatrick.....	Cincinnati, Ohio.....	May 20, 1855.
13137	Straw-cutters.....	Henry Peckham.....	King's Ferry, N. Y.....	June 26, 1855.
13215	Straw-cutters.....	Lyman Cinton.....	North Haven, Conn.....	July 10, 1855.
13285	Straw-cutters.....	Dewett C. Cumings.....	Fulton, N. Y.....	Aug. 7, 1855.
13509	Straw-cutters.....	John A. Thompson.....	Cayuga, N. Y.....	Aug. 28, 1855.
13718	Straw-cutters.....	Luther B. Fisher.....	Cold Water, Mich.....	Oct. 30, 1855.
13907	Straw-cutters.....	L. J. Nicks.....	Pateron, N. J.....	Nov. 13, 1855.

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13349	Winnowing machines, mode of hanging the screens of.	John A. Krake .....	Alden, N. Y. ....	Nov. 27, 1855.
13153	Yokes, ox .....	Levi Dederick .....	Albany, N. Y. ....	Jan. 2, 1855.
13925	Yokes, ox .....	John Tucker .....	Norway, N. Y. ....	May 22, 1855.
13472	Yokes, horse .....	John Woodward .....	Wilmot Flat, N. H. ....	Aug. 21, 1855.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12237	Amalgamator and gold-washer .....	John S. Addison .....	New York, N. Y. ....	Jan. 16, 1855.
13645	Amalgamator .....	Samuel Gardiner, jr. ....	New York, N. Y. ....	Oct. 9, 1855.
13679	Amalgamators .....	Edward N. Kent .....	New York, N. Y. ....	Dec. 4, 1855.
12454	Auger-handle, fastening .....	Guy H. Hubbard .....	Sherburne Falls, Mass. ....	Mar. 6, 1855.
13025	Beams or girders, wrought iron .....	Anthony Collak .....	Philadelphia, Pa. ....	June 5, 1855.
13599	Beams, corrugated .....	Richard Montgomery .....	New York, N. Y. ....	Sept. 25, 1855.
12289	Bits, centre, fastening .....	Abel W. Streeter .....	Sherburne Falls, Mass. ....	Jan. 23, 1855.
12262	Bolts, dies for making .....	John J. Willmarth .....	Northbridge, Mass. ....	Jan. 16, 1855.
12515	Bolts, machines for making .....	Robert Crichton .....	Buchanan, Pa. ....	May 8, 1855.
13241	Bolts, machines for making .....	William E. Ward .....	Port Chester, N. Y. ....	July 10, 1855.
13117	Boring cylinders, machines for .....	Marvin S. Otis, assignor to Chas. Rumley ..	Rochester, N. Y. ....	June 19, 1855.
13780	Boring implements, making .....	Ransom Cook .....	Sherburne Falls, Mass. ....	Nov. 13, 1855.
13218	Buckles .....	Sheldon S. Hartshorn .....	Orange, Conn. ....	July 10, 1855.
13907	Buckles .....	Sheldon S. Hartshorn .....	Orange, Conn. ....	Dec. 11, 1855.
13695	Casting tea-pot spouts and handles .....	Theodore Ackerman, assignor to H. H. Homan, W. Muhle, and J. Ackerman. ....	Cincinnati, Ohio .....	Oct. 16, 1855.
13948	Casting bells, moulds for .....	Eber Jones .....	Troy, N. Y. ....	Dec. 18, 1855.

*CLASS II.—METALLURGY, and manufacture of metals, and instruments therefor.*

12439	Chain links, machines for making .....	Amni M. George .....	Nashua, N. H. ....	Feb. 27, 1855.
12439	Chain-making machines .....	E. Wiesenborn .....	New York, N. Y. ....	Dec. 11, 1855.
12511	Dies for cop-tube machines .....	James Eaton .....	Townsend Harbor, Mass. ....	Jan. 30, 1855.
12659	Dies and stocks for ornamenting metal tubes, arrangement of .....	S. M. Cate and E. Jordon .....	Waterbury, Conn. ....	April 10, 1855.
12735	Dies for bolt-forging machines .....	John J. Wilmarth .....	Northbridge, Mass. ....	April 17, 1855.
12855	Door-knobs .....	William Leighton, assignor to New England Glass Company .....	Cambridge, Mass. ....	Jan. 16, 1855.
12820	Door-latches, locking spindle .....	William H. McNamee .....	Philadelphia, Pa. ....	Jan. 31, 1855.
12675	Door fasteners, portable .....	Benjamin R. Eames .....	South Newry, Me. ....	April 10, 1855.
13473	Door-knob .....	Alonzo E. Young, assignor to himself and M. Worthley .....	Dorchester, Mass. ....	Aug. 21, 1855.
13770	Door-springs .....	Amos Westcott .....	Syracuse, N. Y. ....	Nov. 6, 1855.
13353	Drills, machine .....	James Conner and Thomas Newby .....	Richmond, Ind. ....	Aug. 7, 1855.
13766	Drilling and boring machine .....	Samuel W. Shryock .....	Hopkinsville, Ky. ....	Nov. 6, 1855.
13445	Drilling and screw-cutting machine .....	Joel P. Heacock .....	Marlboro', Ohio. ....	Nov. 27, 1855.
13310	Files, machines for cutting .....	Horace Hotchkiss .....	Waterbury, Conn. ....	July 24, 1855.
12594	Fireproof safes .....	Richard G. Holmes and Wm. H. Butler .....	New York, N. Y. ....	Mar. 27, 1855.
12133	Flanges on wrought-iron beams, machines for forming .....	Julius H. Kroehl .....	New York, N. Y. ....	Jan. 2, 1855.
13514	Flasks for moulding bath tubs .....	John Demarest, assignor to The J. L. Mott Iron Works .....	Mott Haven, N. Y. ....	Aug. 28, 1855.
12252	Folding machines, metal .....	Daniel Newton .....	Southington, Conn. ....	Jan. 23, 1855.
12135	Forging car-wheels, machines for .....	Wealy M. Lee .....	New York, N. Y. ....	Jan. 2, 1855.
12961	Forging machines .....	Silas S. Furnam .....	Boston, Mass. ....	May 29, 1855.
13053	Forging, heating wrought-iron wheels for .....	William R. Thompson .....	Cleveland, Ohio. ....	June 12, 1855.
13434	Forging machine .....	Daniel Noyes .....	Abington, Mass. ....	Aug. 14, 1855.
	Goldwasher and amalgamator. (See Amalgamator) .....	John S. Addison .....	New York, N. Y. ....	Jan. 16, 1855.
12770	Hammers, forge .....	John Comstock, assignor to .....	New London, Conn. ....	April 24, 1855.
		Peter Naylor .....	New York, N. Y. ....	
		Milo Peck .....	New Haven, Conn. ....	
13179	Hammers, trip .....	Peter L. Weimer .....	Reading, Pa. ....	July 3, 1855.
13508	Hammers, trip .....	Charles Miller .....	New York, N. Y. ....	Sept. 25, 1855.
12443	Hinges, butt, machines for making .....	Henry E. Canfield .....	New York, N. Y. ....	Feb. 27, 1855.
12553	Hinges, spring, double-acting .....	Araunus French .....	Waterbury, Conn. ....	May 15, 1855.
13045	Hinges, &c., springs for .....	Joseph Plegar .....	Birmingham, Pa. ....	June 19, 1855.
13321	Hinges .....	Solon S. Jackman .....	Lock Haven, Pa. ....	July 24, 1855.
13355	Iron, machines for compressing puddlers, balls, and other masses of .....			July 31, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
	Iron, processes for smelting. (See Class IV.)			
12227	Kettles, machines for forming, from metal { disk.	Lyman C. Camp, assignor to PHELPS, DODGE, & CO.....	Berlin, Conn.....	Jan. 9, 1855.
12186	Locks, pad.....	Thomas Slaight.....	New York, N. Y.....	Jan. 2, 1855.
12240	Locks, latch, door.....	John C. Kline.....	Newark, N. J.....	Jan. 16, 1855.
12403	Locks, bank.....	Frederick Deueler.....	Pittsburg, Pa.....	Jan. 20, 1855.
12476	Locks, door, guards for.....	William Ballauf and Frederick Wurh.....	New York, N. Y.....	Mar. 6, 1855.
12526	Locks, door.....	William Warwick.....	Cincinnati, Ohio.....	Mar. 6, 1855.
12647	Lock, bank.....	C Gustav. Mueller.....	Birmingham, Pa.....	Mar. 13, 1855.
12784	Locks, door, alarm attachment for.....	John Schneider.....	Charleston, S. C.....	April 3, 1855.
12932	Locks, bank.....	Linus Yale.....	Rochester, N. Y.....	May 1, 1855.
12957	Locks, door.....	William Maurer.....	Newport, N. Y.....	May 22, 1855.
13037	Locks, door.....	John C. Kline.....	New York, N. Y.....	May 29, 1855.
13052	Locks, door.....	Joseph C. Silvy.....	Pittsburg, Pa.....	June 12, 1855.
13163	Locking latches for doors.....	Edmund Field.....	New Orleans, La.....	June 12, 1855.
13722	Locks.....	R. G. Holmes and William H. Butler.....	Greenwich, Conn.....	July 3, 1855.
13753	Locks.....	D. W. G. Humphrey.....	New York, N. Y.....	Oct. 30, 1855.
13814	Locks.....	H. A. Bleckman.....	Gray, Me.....	Nov. 6, 1855.
13880	Locks.....	Edward Kershaw.....	Ronendorf, Prussia.....	Nov. 20, 1855.
13884	Locks.....	J. H. Pomeroy.....	Boston, Mass.....	Dec. 4, 1855.
13911	Locks for freight cars.....	Henry C. Jones.....	Bloomington, Ill.....	Dec. 4, 1855.
13964	Locks.....	Thomas Bowles, assignor to R. M. Patrick.....	Newark, N. J.....	Dec. 11, 1855.
12708	Locomotive-drivers, lathes for turning.....	J. M. Stone, assignor to Manchester Locomotive Works.....	New York, N. Y.....	Dec. 18, 1855.
			Manchester, N. H.....	April 10, 1855.
12117	Metals, machine for boring, planing, and slotting.....	Norman Aylesworth.....	Rochester, N. Y.....	Jan. 2, 1855.
12228	Metal tubes, manufacturing.....	William Beasley, assignor to J. & J. W. Brett..... C. W. Tupper.....	Westminster. } London. .... } England.	Jan. 9, 1855.
12268	Metal, sheet, rollers for corrugating.....	William Beasley..... Solomon G. Booth.....	Smethwick... } New York, N. Y.....	Jan. 23, 1855.

12905	Metal, sheet, machines for cutting.....	<i>Cephas Applebee</i> .....	Lyndon, Vt.....	July 24, 1855.
12903	Metal, machines for turning, boring, and slotting.	Alanson Brown.....	Rochester, N. Y.....	Mar. 13, 1855.
12712	Metal, machines for punching.....	Marshall Burnett and Charles Vander Woerd.....	Boston, Mass.....	April 17, 1855.
12723	Metal, machines for punching.....	De Grasse, Fowler, and Geo. Fowler.....	Wallingford, Conn.....	April 17, 1855.
12739	Metal tubes, arrangement of rollers for making.	Martin R. Griswold.....	Watertown, Conn.....	April 17, 1855.
12767	Metal, machines for planing.....	James H. Thompson.....	Paterson, N. J.....	April 24, 1855.
12799	Metal, machines for burnishing.....	Jeremiah Steer.....	Brittol, Conn.....	May 1, 1855.
12971	Metal, sheet, pipes, machines for bolt-cally creasing.	Alfred B. Seymour.....	Claverach, N. Y.....	May 29, 1855.
13046	Metal, sheet, folding machines.....	Oron W. Stow.....	Planterville, Conn.....	June 12, 1855.
13355	Metal tubes, machines for forming.....	Edwin Ellis.....	Ansonia, Conn.....	July 17, 1855.
13225	Moulding, circular, and under-cut work.	William Sellers and James Walker.....	Cincinnati, Ohio.....	Oct. 2, 1855.
13118	Nuts, making.....	Isaac H. Steer, assignor to Henry Carter.....	Winchester, Va.....	June 19, 1855;
		Robert Brayton.....	Pittsburg, Pa.....	Dec. 19, 1854.
12194	Nuts and washers, machines for making.	Robert Brayton.....	Buffalo, N. Y.....	Jan. 9, 1855.
13252	Nut-machines.....	Richard H. Cole.....	St. Louis, Mo.....	July 17, 1855.
13720	Pin-machine.....	Robert Griffiths.....	Alleghany City, Pa.....	Oct. 30, 1855.
	Ore, frankline, methods of working.			
	(See Class IV.)			
12191	Ores, machine for crushing and pulverizing.	Arnold Bufum.....	Perth Amboy, N. J.....	Jan. 9, 1855.
12576	Ore-separators.....	Reuben Shaler.....	Madison, Conn.....	Mar. 20, 1855.
13136	Ore, machines for cleaning.....	Beardard O'Bryan.....	Marletta, Pa.....	June 26, 1855.
17892	Ore, (quartz-crushing machine.).....	Richard Vose.....	New York, N. Y.....	Dec. 4, 1855.
13861	Ore, galena, or lead, treating.....	Jul. E. Schwabe.....	New York, N. Y.....	Dec. 18, 1855.
12975	Pin-stitching machines.....	J. B. Terry.....	Hartford, Conn.....	May 29, 1855.
13553	Pins, sticking, machines for crimping paper for.	J. B. Terry.....	Hartford, Conn.....	Sept. 11, 1855.
13785	Pins, separating.....	J. Fowler.....	Waterbury, Conn.....	Nov. 13, 1855.
13892	Quartz-crushing machines. (See Ore.)	Richard Vose.....	New York, N. Y.....	Dec. 4, 1855.
13175	Rivets, machines for making.....	Frederick W. Hoffman and C. W. G. Fordan.....	New York, N. Y.....	July 3, 1855.
12837	Rolling railroad rails, machine for.....	Andrew J. Sufern.....	Suffern, N. Y.....	May 8, 1855.
12500	Sash-fastener.....	William E. Arnold.....	Rochester, N. Y.....	Mar. 13, 1855.
12710	Sash-fasteners.....	William E. Arnold.....	Rochester, N. Y.....	April 17, 1855.

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*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13191	Sash-fastener.....	Asahel Gilbert, jr.....	Lowell, Mass.....	Aug. 28, 1855.
13196	Sash-fastener.....	William Paton.....	Towanda, Pa.....	Oct. 9, 1855.
13177	Screw-fastenings.....	John Loudon and Otto Ahlstrom.....	New York, N. Y.....	July 3, 1855.
13767	Screw-blanks, arranging and feeding..... screw-cutting, drilling, and, machine (See Drilling.)	Elliot Savage.....	East Berlin, Conn.....	Nov. 6, 1855.
	Screws, rain-staff, for ship carpenters. (See Class VII.)			
12931	Sifting, apparatus for (See Class XXII.)	J. H. Wygant.....	Hackensack, N. J.....	May 22, 1855.
13735	Spike-machine.....	Amos Whittemore.....	Cambridgeport, Mass.....	Sept. 4, 1855.
13945	Spike-machines.....	A. M. George.....	New York, N. Y.....	Dec. 18, 1855.
	Steel, compositions for working. (See Class IV.)			
13841	Striker, blacksmiths'.....	Denniss S. Blue.....	Fort Seneca, Ohio.....	Nov. 27, 1855.
12219	Tin-cans, apparatus for soldering.....	William J. Stevenson.....	New York, N. Y.....	Jan. 9, 1855.
13392	Tires upon wheels, mode of securing.....	John L. Irwin.....	Franklin, Ala.....	Aug. 7, 1855.
	Trip-hammers. (See Hammer).....	Milo Peck.....	New Haven, Conn.....	July 3, 1855.
13256	Vises, adjustable.....	John Fraser, assignor to Logan, Vail & Co.....	New York, N. Y.....	July 17, 1855.
13479	Vise.....	R. W. & D. Davis.....	Yellow Springs, Ohio.....	Aug. 28, 1855.
13691	Vises.....	Jasper Johnson.....	Genesee, N. Y.....	Oct. 16, 1855.
12275	Window-blinds, means for holding.....	Henry A. Frost.....	Worcester, Mass.....	Jan. 23, 1855.
13570	Wire, cutting.....	William Grover.....	Holyoke, Mass.....	Sept. 18, 1855.
13521	Wire dish-covers, machine for making.....	William Lincoln.....	Oakham, Mass.....	Oct. 9, 1855.
12195	Wrenches, ratchet.....	Charles G. Everitt.....	Brooklyn, N. Y.....	Jan. 9, 1855.
12410	Wrenches, screw.....	Samuel H. Noble.....	Westfield, Mass.....	Feb. 20, 1855.
		Ruggles, Nourse, Mason & Co.....	Westfield, Mass.....	May 22, 1855.
12510	Wrenches, screw.....	John Hyde.....	Westfield, Mass.....	Mar. 13, 1855.
12950	Wrenches, screw.....	L. D. Gilman.....	N. w York, N. Y.....	Mar. 13, 1855.
12935	Wrenches, screw.....	Francis S. Coburn, assignor to. Charles B. Bristol.....	Troy, N. Y.....	Mar. 27, 1855.
13120	Wrench.....		Naugatuck, Conn.....	June 26, 1855.

13231	Wrenches, slide.....	Benjamin F. Joslyn.....	Worcester, Mass.....	July 10, 1855.
13288	Wrench.....	Alben Graham.....	Roxbury, Mass.....	Aug. 7, 1855.
13456	Wrench.....	John D. Dale.....	Philadelphia, Pa.....	Aug. 21, 1855.
13597	Wrench.....	H. J. Behrens.....	New York, N. Y.....	Sept. 25, 1855.
13617	Wrenches, screw.....	Joseph Hyde.....	New York, N. Y.....	Oct. 2, 1855.

CLASS III.—MANUFACTURES OF FIBROUS AND TEXTILE SUBSTANCES, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13391	Braiding-machines.....	Liveras Hull.....	Charlestown, Mass.....	Aug. 7, 1855.
13719	Braiding, machinery for.....	Liveras Hull.....	Charlestown, Mass.....	Oct. 30, 1855.
12469	Carding-machines.....	Horatio N. Gambrill and Singleton F. Burgee.....	Woodbury Mills, Md.....	Feb. 27, 1855; English patent, Aug. 22, 1854.
13395	Carpets, manufacturing.....	John G. McNair.....	West Farms, N. Y.....	Aug. 7, 1855.
13702	Carpets, finishing.....	Samuel Fay.....	Lowell, Mass.....	Oct. 23, 1855.
13918	Cloth, felt, manufacture of ornamental.....	O. B. Tomlinson.....	Athens, Pa.....	June 5, 1855.
13543	Cloth, folding and measuring, machinery for.....	Jos. D. Elliot.....	Leicester, Mass.....	Sept. 11, 1855.
13483	Cloth stretching rollers.....	Nathan Simmons.....	Providence, R. I.....	Dec. 4, 1855.
13200	Cloth, folding and measuring, machinery for.....	James Baxendale.....	Providence, R. I.....	Dec. 11, 1855.
12668	Cord, lines twist or, machinery for winding up.....	Boardman Byron and George C. Sweet.....	Norwich, Conn.....	April 10, 1855.
13445	Cord, plating and twisting.....	William H. Zahn, assignor to F. Reuter.....	New York, N. Y.....	May 8, 1855.
13920	Cordage-machinery.....	Henry Pearce.....	Cincinnati, Ohio.....	May 22, 1855.
13461	Cotton, machinery for cleaning.....	Samuel W. Brown.....	Lowell, Mass.....	Sept. 18, 1855.
13532	Fabrics, pile, cutting.....	Erastus B. Bigelow.....	Boston, Mass.....	Dec. 4, 1855.
13370	Fabrics, woven.....	John Hesley, assignor to James Bishop.....	Bolton, England.....	Dec. 18, 1855; English patent, Nov. 17, 1846.
13343	Felt goods, seamless, manufacturing.....	John H. Bloodgood.....	New York, N. Y.....	Feb. 6, 1855.
12563	Fibrous materials, condensers for.....	William H. Howard.....	Philadelphia, Pa.....	May 15, 1855.
13578	Fibrous materials, machinery for picking.....	Richard Kitson.....	Lowell, Mass.....	Sept. 18, 1855.



*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13650	Fibrous and textile substances, apparatus for washing and bleaching.	J. A. Jillion and H. Winsfield.....	Poughkeepsie, N. Y.....	Oct. 9, 1855.
13636	Fibre, vegetable, preparing.	Jean Blanc.....	New Orleans, La.....	Oct. 9, 1855.
13380	Flocks, machines for preparing.	L. W. Boynton.....	Worcester, Mass.....	Aug. 7, 1855.
12132	Gins, cotton.....	Asa P. Keith.....	Bridgewater, Mass.....	Jan. 2, 1855.
12376	Gins, cotton.....	Henry Clark.....	Newport, Florida.....	Feb. 13, 1855.
12635	Gins, cotton.....	J. B. Meil.....	Riceboro', Ga.....	April 3, 1855.
12894	Gins, cotton.....	Leonard Campbell, assignor to L. Campbell and Thos. W. Brown.	Columbus, Miss.....	May 22, 1855.
13131	Gins, cotton.....	R. A. L. McCurdy.....	Pleasant Hill, La.....	June 26, 1855.
13441	Gins, cotton.....	John Simpson.....	Lewisville S. C.....	Aug. 14, 1855.
13494	Gins, cotton, saws.....	A. D. Brown, assignor to.....	Columbus, Ga.....	Oct. 9, 1855.
13641	Gins, cotton.....	H. H. Fultz.....	Lexington, Miss.....	Nov. 20, 1855.
13815	Gins, cotton.....	L. S. Chichester.....	New York, N. Y.....	Aug. 28, 1855.
13898	Gins, opening and feeding to the, machinery for.	Margaret L. Brown.....	Opalika, Ala.....	Dec. 4, 1855.
13981	Hair, whipping, machinery for.....	Major B. Clarke.....	Newman, Ga.....	Dec. 25, 1855.
12321	Hat-bodies, machinery for felting.....	Isaac Davis.....	Mechanicsburgh, Ohio.....	Jan. 30, 1855.
12353	Hats and bonnets, pressing.....	S. S. Middlebrook, J. B. Blakelee, and C. F. Blakelee.	Newton, Conn.....	Feb. 6, 1855.
12386	Hat-bodies, machinery for felting.....	S. E. Fettee.....	Foxborough, Mass.....	Feb. 13, 1855.
13005	Hats, process of manufacturing.....	William Fuzzard.....	Newark, N. J.....	June 5, 1855.
13013	Hats, manufacture of.....	Lansing E. Hopkins.....	Brooklyn, N. Y.....	June 5, 1855.
13304	Hat-bodies, machines for sizing.....	Andrew Rankin.....	Newark, N. J.....	July 24, 1855.
13613	Hat-bodies, preparing materials for.....	Phineas Emmons.....	New York, N. Y.....	Oct. 2, 1855.
13614	Hat-bodies, machinery for manufacturing.....	P. Arneson, J. Pederson, and H. Rees...	New York, N. Y.....	Oct. 2, 1855.
13963	Hat-bodies, felting.....	Isaac Searles.....	Newark, N. J.....	Dec. 18, 1855.
13698	Hat-bodies, felting.....	William W. Cumberland.....	Newark, N. J.....	Oct. 23, 1855.
	Hemming and cording, guides for. (See sewing-machines.)	Henry B. Odiorne.....	Philadelphia, Pa.....	May 8, 1855.
12456	Hemp-breaker.....	D. W. Hughes.....	New London, Mo.....	Feb. 27, 1855.

CLASS.	INVENTOR, NAME, MACHINES FOR CLEANSING AND WHIPPING SEED FROM BROOD-CORN.	INVENTOR, NAME, FIA.	DATE.	DATE.
12866	Knitting-machines, stop-motion of.	Robert Cushman.	May 22, 1855.	May 22, 1855.
12867	Knitting-machines.	J. B. Aiken, assignor to J. B. & H. Aiken.	May 22, 1855.	May 22, 1855.
12868	Knitting-machines.	Thomas Fowler.	July 3, 1855.	July 3, 1855.
12869	Knitting-machines.	John Pepper, assignor to "The Franklin Mills."	July 17, 1855.	July 17, 1855.
12870	Knitting machines.	W. and J. B. Aiken, assignors to Herriek and Jonas B. Aiken.	Sept. 11, 1855.	Sept. 11, 1855.
12871	Knitting-machines.	C. Tompkins, and Jno. Johnson.	Sept. 18, 1855.	Sept. 18, 1855.
12872	Knitting-machines.	Joseph Powell.	Oct. 2, 1855.	Oct. 2, 1855.
12873	Knitting-machines.	John H. Doolittle, assignor to "American Hosiery Company."	Oct. 16, 1855.	Oct. 16, 1855.
12874	Knitting-machines.	A. French.	Nov. 6, 1855.	Nov. 6, 1855.
12875	Knitting-machines.	Timothy Bailey.	Nov. 20, 1855.	Nov. 20, 1855.
12876	Knitting-machines.	R. L. Hawes, assignor to Robert Rennie.	Nov. 20, 1855.	Nov. 20, 1855.
12877	Knitting-machines.	Abram Brigham.	Jan. 2, 1855.	Jan. 2, 1855.
12878	Knitting-machines.	Joseph Welsh.	Jan. 2, 1855.	Jan. 2, 1855.
12879	Knitting-machines.	William Tongue, assignor to.	Jan. 9, 1855.	Jan. 9, 1855.
12880	Knitting-machines.	Wm. Tongue and James Buckley.	Jan. 9, 1855.	Jan. 9, 1855.
12881	Knitting-machines.	John H. Allen.	Jan. 16, 1855.	Jan. 16, 1855.
12882	Knitting-machines.	James Eccles.	Jan. 23, 1855.	Jan. 23, 1855.
12883	Knitting-machines.	George Copeland.	Jan. 23, 1855.	Jan. 23, 1855.
12884	Knitting-machines.	W. V. Gee, assignor to the Atwater and Bristol Manufacturing Company.	Feb. 27, 1855.	Feb. 27, 1855.
12885	Knitting-machines.	Lewis Van Riper.	Mar. 20, 1855.	Mar. 20, 1855.
12886	Knitting-machines.	David S. Harris.	Mar. 27, 1855.	Mar. 27, 1855.
12887	Knitting-machines.	William S. Irish.	Mar. 27, 1855.	Mar. 27, 1855.
12888	Knitting-machines.	Barton H. Jenks.	April 3, 1855.	April 3, 1855.
12889	Knitting-machines.	J. G. Melville and Wm. Brayshaw.	Jan. 8, 1855.	Jan. 8, 1855.
12890	Knitting-machines.	Larry Litchfield.	April 24, 1855.	April 24, 1855.
12891	Knitting-machines.	Erza P. Marble.	May 1, 1855.	May 1, 1855.
12892	Knitting-machines.	Jeremiah C. Tilton.	May 1, 1855.	May 1, 1855.
12893	Knitting-machines.	John Avery.	May 15, 1855.	May 15, 1855.
12894	Knitting-machines.	Daniel W. Snell.	May 29, 1855.	May 29, 1855.
12895	Knitting-machines.	Joseph Welsh.	May 29, 1855.	May 29, 1855.
12896	Knitting-machines.	Wm. Whitehead and John Shinn.	May 29, 1855.	May 29, 1855.
12897	Knitting-machines.	Jacob Sonnenf.	June 5, 1855.	June 5, 1855.
12898	Knitting-machines.		June 23, 1855.	June 23, 1855.

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## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13186	Looms.....	Samuel J. Thomas.....	Lawrence, Mass.....	July 3, 1855.
13187	Looms.....	Samuel J. Thomas.....	Lawrence, Mass.....	July 3, 1855.
13217	Looms.....	Rufus M. Dill.....	Holyoke, Mass.....	July 10, 1855.
13284	Looms.....	Edward Wood.....	Philadelphia, Pa.....	July 17, 1855.
13322	Looms, shuttle-guides for.....	H. T. Robbins.....	Lowell, Mass.....	July 24, 1855.
13382	Looms.....	John Broadbent.....	Oak Grove, Ky.....	Aug. 7, 1855.
13413	Looms, temples for.....	James Smith, assignor to Smith & Botterill.....	Laurel, Md.....	Aug. 7, 1855.
13571	Looms for weaving suspender webbing.....	William V. Geo.....	New Haven, Conn.....	Sept. 18, 1855.
13724	Looms.....	James O. Leach.....	Ballston Spa, N. Y.....	Oct. 30, 1855.
13848	Looms, bag.....	L. B. Jilleon and G. Sparhawk.....	Lewiston, Me.....	Nov. 27, 1855.
13936	Looms for weaving pile fabrics.....	E. B. Bigelow.....	Boston, Mass.....	Dec. 18, 1855.
14000	Looms for weaving wire.....	George W. Smith.....	Maunch-Chunk, Pa.....	Dec. 25, 1855.
13752	Mules, self-acting.....	John Harris.....	Lawrence, Mass.....	Nov. 6, 1855.
12233	Paper-stock, machines for washing.....	Horace W. Peaslee.....	Malden Bridge, N. Y.....	Jan. 23, 1855; English patent dated Sept. 20, 1854.
12442	Paper from resinous barks, preparation of. (See Class IV.)	Obadiah Marland.....	Boston, Mass.....	Feb. 27, 1855.
12978	Paper-making, rolls and driers for.....			
13153	Paper-pulp, manufacture of. (See Class IV.)			
13412	Paper-pulp, preparing wood for.....	Milton D. Whipple.....	Charlestown, Mass.....	May 29, 1855.
	Paper, sand, cutting-machines.....	William Adamson.....	Philadelphia, Pa.....	July 3, 1855.
	Paper-pulp, machinery for making.....	Louis Koch, assignor to P. B. Sweeney and M. Lacour.....	New York, N. Y.....	Aug. 7, 1855.
13229	Rope and cordage-machines.....	Samuel Pearson, Jr., and Wm. H. Gardner.....	Roxbury, Mass.....	July 10, 1855.
13309	Rope, machinery for making.....	John Harris.....	North Hoosick, N. Y.....	July 24, 1855.
12138	Roving, regulating the size of.....	Samuel Pearson, Jr., and Wm. H. Gardner.....	Roxbury, Mass.....	Jan. 2, 1855.
12581	Roving, woolen, preparing.....	Augustus E. Bigelow.....	Chilcopee, Mass.....	Mar. 27, 1855.
13629	Seine-needles, machinery for filling.....	H. M. Glines, assignor to John M. and S. F. Stanton.....	Manchester, N. H.....	Oct. 2, 1855.
12146	Sewing-machines.....	Daniel T. Ward.....	Newark, N. J.....	Jan. 2, 1855.
12233	Sewing-machines.....	Jotham S. Conant, assignor to A. B. Ely.....	New York, N. Y.....	Jan. 16, 1855.
			Boston, Mass.....	

12247	Sewing-machines	H. B. Smith	Lowell, Mass.	Jan. 16, 1855
12323	Sewing-machines	John B. Nichols	Lynn, Mass.	Jan. 30, 1855.
12336	Sewing-machines, waxing thread on.	Salem Wilder	Lynn, Mass.	Jan. 30, 1855.
12364	Sewing-machines	Isaac M. Singer	New York, N. Y.	Feb. 6, 1855.
12369	Sewing-machines	George H. and Benjamin H. Horn	Brooklyn, N. Y.	Feb. 13, 1855.
12402	Sewing-machines	Edwin A. Forbush	Aahland, Mass.	Feb. 20, 1855.
12557	Sewing-machines	T. J. W. Robertson, assignor to Robert-son and A. E. Beach.	New York, N. Y.	Mar. 20, 1855.
12734	Sewing-machines	E. Harry Smith, assignor to Wheeler & Wilson Manufacturing Co.	New York, N. Y.	April 17, 1855.
12573	Sewing-machines	George W. Stedman	Watertown, Conn.	Mar. 20, 1855.
12798	Sewing-machines	George W. Stedman	Vienna, N. J.	May 1, 1855.
12826	Sewing-machines, guides for hemming and cording.	Henry B. Odiorne	Vienna, N. J.	May 6, 1855.
12856	Sewing-machines	John Chilcott and James Scrimgeour	Philadelphia, Pa.	May 6, 1855.
12858	Sewing-machines, cording, guide for.	Henry W. Dickinson	Brooklyn, N. Y.	May 15, 1855.
12902	Sewing-machines	Charles A. Durgin	Hartford, Conn.	May 15, 1855.
12923	Sewing-machines	T. J. W. Robertson	New York, N. Y.	May 22, 1855.
12939	Sewing-machines	Jos. Bond, jr.	New York, N. Y.	May 22, 1855.
12969	Sewing-machines	Isaac M. Singer	Philadelphia, Pa.	May 22, 1855.
12984	Sewing-machines	Addison Capron, assignor to A. Capron	New York, N. Y.	May 29, 1855.
13064	Sewing-machines	J. S. Dennis, and H. M. Richards	Attleboro', Mass.	May 29, 1855.
13065	Sewing-machines	T. J. W. Robertson	Somerville, Mass.	May 29, 1855.
13178	Sewing-machines	Isaac M. Singer	Attleboro', Mass.	June 12, 1855.
		Jean Pierre Mollere	New York, N. Y.	June 12, 1855.
13195	Sewing-machines	Jerome B. Woodruff	Lyons, France	French pa- tent dated May 30, 1854.
13201	Sewing-machines	Geo. W. Stedman	Washington, D. C.	July 3, 1855.
13242	Sewing-machines	Jerome B. Woodruff	Vienna, N. J.	July 3, 1855.
13275	Sewing-machines, guides for	Frederick R. Robinson	Washington, D. C.	July 10, 1855.
13353	Sewing-machines	James Harrison, jr.	Worcester, Mass.	July 17, 1855.
13362	Sewing-machines	Isaac M. Singer	Milwaukee, Wis.	July 31, 1855.
13499	Sewing-machine cases	F. A. Ross and Wm. H. Marshall	New York, N. Y.	July 31, 1855.
13616	Sewing-machines	James Harrison, jr.	New York, N. Y.	Aug. 28, 1855.
13630	Sewing-machines	C. J. Copperthwaite	Milwaukee, Wis.	Oct. 2, 1855.
13651	Sewing-machines	Isaac M. Singer	Philadelphia, Pa.	Oct. 2, 1855.
13692	Sewing-machines	Isaac M. Singer	New York, N. Y.	Oct. 9, 1855.
13657	Sewing-machines	Isaac M. Singer	New York, N. Y.	Oct. 9, 1855.
			New York, N. Y.	Oct. 16, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13727	Sewing-machines .....	L. W. Langdon .....	Rochester, N. Y. ....	Oct. 30, 1855.
13768	Sewing-machines .....	Isaac M. Singer .....	New York, N. Y. ....	Nov. 6, 1855.
13856	Sewing-machines .....	George W. Steadman .....	Vienna, N. J. ....	Nov. 27, 1855.
13966	Sewing-machines .....	Isaac M. Singer .....	New York, N. Y. ....	Dec. 18, 1855.
12532	Spinning wool, machinery for .....	F. S. Stoddard .....	Litchfield, Conn. ....	Mar. 13, 1855.
12582	Spinning wool .....	Augustus E. Bigelow .....	Chicopee, Mass. ....	Mar. 27, 1855.
12889	Spinning, machinery for .....	Arad Woodworth, 3d .....	Boston, Mass. ....	May 15, 1855.
13024	Spinning, ring, frames .....	William Darker, Jr., assignor to J. B. Thompson. ....	West Philadelphia, Pa. ....	June 5, 1855.
13726	Spinning, frames, ring and traveller .....	Henry Luther .....	Charleston, S. C. ....	Oct. 30, 1855.
12467	Thread, covering, with wool or silk..... {	Joseph Haslam, by his heirs, John Haslam and James Haslam .....	New York, N. Y. ....	Feb. 27, 1855.
12885	Thread, sewing, dressing .....	John M. Heck, assignor to Henry Perry. ....	Searadale, N. Y. ....	May 15, 1855.
13267	Thread, sewing, trebling a single strand, &c. ....	Harold Kelsey .....	Plymouth, Conn. ....	July 17, 1855.
13562	Thread, a single, machinery for trebling .....	Anson A. Swift, assignor to himself and Samuel L. Hill. ....	North Branch, in town of Andrum, N. H. ....	Sept. 11, 1855.
13795	Throstle-frames, giving tension to the endless band of .....	Joseph Morse .....	Florence, Mass. ....	Nov. 13, 1855.
13550	Warps, machinery for sizing and dressing. ....	John A. Elder and Ephraim Wood .....	Woonsocket, R. I. ....	July 31, 1855.
12175	Weavers' harness, machines for making .....	Joseph S. Winsor .....	Westbrook, Maine. ....	Jan. 2, 1855.
13290	Wool, machinery for preparing for combing. ....	A. Reinhardt, assignor to .....	Winthrop, Maine. ....	July 17, 1855.
13870	Wool-combing machines .....	N. Schlumberger & Co. ....	Providence, R. I. ....	Dec. 4, 1855.
	Wool, process for treating. (See Class IV.) .....	Peter Fairbairn and John Hargrave .....	Citizen of France, residing in United States. ....	English patent dated Nov. 6, 1852.
	Yarns and cloth, machine for printing. (See Class XVIII.) .....		France. ....	
			Leeds, England .....	

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
19998	Amalgamating the precious metals .....	Leander R. Streeter, assignor to L. R. Streeter and Ira Leonard.	Lowell, Mass.....	May 29, 1855.
19160	Beer, fermenting' tune for .....	Adolph Hammer.....	Philadelphia, Pa.....	Jan. 2, 1855.
19535	Benzole vapor apparatus.....	Charles Cunningham, assignor to John O. Pedrick.	Nashua, N. H.....	Mar. 13, 1855.
19709	Bleaching apparatus.....	Charles T. Appleton.....	Roxbury, Mass.....	April 17, 1855; English patent dated Aug. 30, 1853.
13008	Bleaching rags, apparatus for.....	Harrison Loring .....	Boston, Mass.....	June 5, 1855.
13928	Bleaching ivory, devices for.....	Wm. W. Welling .....	Brooklyn, N. Y.....	Dec. 11, 1855.
13633	Borax, manufacture of, from native borate of lime.	T. Bell and H. Scholefield.....	South Shields, England.....	Oct. 9, 1855.
12193	Candle-mould machines.....	Lewis C. Ashley .....	Troy, N. Y.....	Jan. 9, 1855.
12495	Candles, machines for making .....	John Stainthorp .....	Buffalo, N. Y.....	Mar. 6, 1855.
13334	Candle-mould apparatus .....	Willis Humiston .....	Troy, N. Y.....	July 24, 1855.
13973	Candle-mould apparatus.....	Lewis C. Ashley .....	Troy, N. Y.....	Dec. 26, 1855.
12153	Cans, preserve, self-sealing.....	Robert Arthur.....	Washington, D. C.....	Jan. 2, 1855.
	Composition for filling in fire-proof safes. (See Class V.)			
	Composition for kindling fires. (See Class V.)			
12151	Compositions for unhairing hides.....	Andrew H. Ward, jr., assignor to A. H. Ward, jr. and Kirk Booth.	Boston, Mass.....	Jan. 2, 1855.
	Compounds, fluid, burning. (See Class V.)			
12212	Compounds, hard-rubber, reworking.....	Charles Morey.....	Citizen of the United States, residing in Paris.	Jan. 9, 1855.
12368	Compounds, tanning. (See Class XVI.)			
	Compositions for bleaching and stuffing leather.	L. W. Flake.....	Louisville, Ky.....	Feb. 6, 1855.
	Compositions for dressing leather. (See Class XVI.)			
12519	Compositions, fire-extinguishing.....	Edward F. Overdeer .....	Chattanooga, Tenn.....	Mar. 13, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13420	Compositions for treating rubber and gutta percha.	Francis Beshnagel.....	New York, N. Y.....	Aug. 14, 1855.
13733	Compositions, roofing.....	James West.....	Syracuse, N. Y.....	Oct. 30, 1855.
12812	Distillation, preparing turpentine for.....	Alexander C. Blount.....	Mount Pleasant, Ala.....	May 8, 1855.
13353	Distilling coal with hydrogen gas.....	Stephen Moredith.....	Meadville, Pa.....	July 31, 1855.
	Enamelling, treating leather for. (See Class XVI.)			
12516	Evaporating apparatus.....	James McCracken.....	Bloomfield, N. J.....	Mar. 13, 1855.
	Fibre, vegetable, preparing. (See Class III.)			
12329	Franklinite ore, methods of working.....	Thaddeus Selleck.....	Greenwich, Conn.....	Jan. 30, 1855.
12496	Gas, illuminating, apparatus for purifying.	Dexter H. Chamberlain, assignor to Henry Woodward.	West Roxbury, Mass.....	Mar. 6, 1855.
12711	Gas retorts, construction of.....	Henry P. M. Birkinbine.....	Philadelphia, Pa.....	April 17, 1855.
13754	Gas-holders.....	Stephen Hill and W. J. Wood.....	Rochester, N. Y.....	Nov. 6, 1855.
12304	Glue, clarifying.....	William Adamson.....	Philadelphia, Pa.....	Jan. 30, 1855.
	Gutta-percha boats, making. (See Class VII.)			
12204	Hop-extracting apparatus.....	Adolph Hammer.....	Philadelphia, Pa.....	Jan. 9, 1855.
12144	India-rubber cloth, processes of making.....	Henry G. Tyer and John Helm.....	New Brunswick, N. J.....	Jan. 2, 1855.
12334	India-rubber cloth, processes for making.	Henry G. Tyer and John Helm.....	New Brunswick, N. J.....	Jan. 30, 1855.
	India-rubber soles, attaching metallic heels to. (See Class XVI.)			
12738	India-rubber springs.....	William F. Converse.....	Harrison, Ohio.....	April 17, 1855.
12933	India-rubber, devulcanizing.....	Sigismund Beer, assignor to Lewis Feuchtwanger and Sigismund Beer.	New York, N. Y.....	May 29, 1855.
	India-rubber, machines for cutting boot and shoe uppers, soles, &c., from sheets of. (See Class XVI.)			
12616	Lead, white, manufacture of, by precipitation.	Richard Baker.....	Newark, N. J.....	April 3, 1855.

13639	<i>Lime, acid, sulphate of, manufacture of. . . Lubricator. (See Class XII.) Lubricator for steam-engines. (See Class XII.)</i>	F. L. Bernard and Jos. Albrocht.....	New Orleans, La.....	Oct. 9, 1855.
	<b>Lubricator for steam machinery. (See Class XII.)</b>			
12716	<b>Lubricator, self-feeding, atmospheric. (See Class XII.)</b>	Nathan Dresser.....	Rochester, N. Y.....	April 17, 1855.
12918	<b>Lubricator, velocitrot. (See Class XII.)</b>	Jacob Marshall.....	Reading, Pa.....	May 22, 1855.
12964	<b>Lubricators, automatic, for railroad car axles. (See Class XII.)</b>	E. Freeman Prentiss.....	Philadelphia, Pa.....	May 29, 1855.
13211	<b>Lubricating axles, plugs for. (See Class X.)</b>	Eleanor Brown, Jr.....	Niagara, N. Y.....	July 10, 1855.
13205	<b>Lubricating compounds.....</b>	Adolph Hammer.....	Philadelphia, Pa.....	Jan. 9, 1855.
12614	<b>Lubricating compounds.....</b>	Henry W. Adams.....	New York, N. Y.....	April 3, 1855.
13486	<b>Lubricating compounds.....</b>	Thomas Barrows.....	Dedham, Mass.....	Oct. 28, 1855.
13557	<b>Lubricating compounds.....</b>	William Wilber.....	New Orleans, La.....	Sept. 11, 1855.
13708	<b>Oil, preparing cotton-seed for extracting. Oil, rosin-lamp. (See Class V.)</b>	Oscar Reichenbach.....	Norristown, Pa.....	Oct. 23, 1855.
12361	<b>Paper-pulp, manufacture of.....</b>	Henry Glynn.....	A subject of Great Britain, now residing in Baltimore, Md.	Feb. 6, 1855.
12414	<b>Paper from resinous barks, preparation of. (See Class XV.)</b>	Chas. C. Hall.....	Portland, Me.....	Feb. 20, 1855.
13326	<b>Paste-board, stone, manufacture of. (See Class XV.)</b>	George Thompson.....	East Tarentum, Pa.....	July 24, 1855.
12139	<b>Potash and soda, preparing..... Processes for calico printing. (See Class XVIII.) Processes for extracting tannin from leather.</b>	Obadiah Rich.....	Cambridgeport, Mass.....	Jan. 2, 1855.



*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12142	Processes for making soap.....	Richard A. Tilghman .....	Philadelphia, Pa.....	Jan. 2, 1855.
12585	Processes for refining jewellers' scrap..	Levi B. Darling.....	Providence, R. I.....	Mar. 27, 1855.
12612	Processes for making kerosene.....	Abraham Gesner, assignor to the "Asphalte Mining and Kerosene Gas Co.," assignors to A. Gesner, assignor to "North American Kerosene Gas-light Company." .....	New York, N. Y.....	Mar. 27, 1855.
12777	Processes for purifying and cleansing wheat.	Charles Campbell .....	San Francisco, Cal.....	May 1, 1855.
12834	Processes for preparing liquids for aiding digestion.	Joshua J. Sherman.....	Albany, N. Y.....	May 8, 1855; antedated March 13, 1885.
12948	Processes for treating auriferous and argentiferous sulphurets.	Homer Holland.....	Westfield, Mass.....	May 29, 1855.
13206	Processes for treating wool.....	Thomas Barrows.....	Dedham, Mass.....	July 10, 1855.
13316	Processes for smelting iron.....	Samuel Macferran.....	Philadelphia, Pa.....	July 24, 1855.
13317	Processes for hulling cotton-seed.....	D. W. Measer.....	Boston, Mass.....	July 24, 1855.
	Processes for making bread. (See Class XVII.)			
	Processes for making japanned leather. (See Class XVI.)			
	Processes for curing meat. (See Class XVII.)			
13367	Processes, tanning (See Class XVI.)	John P. Hale.....	Kanawha, Va.....	Dec. 25, 1855.
13819	Salt apparatus for making.....	Benjamin Hardinge.....	New York, N. Y.....	May 8, 1855.
13840	Silica, apparatus for dissolving.....	Joel Webster.....	Brooklyn, N. Y.....	May 8, 1855.
13367	Silvering looking-glasses.....	Anton Van Haagen.....	Cincinnati, Ohio.....	July 31, 1855.
13368	Soap-cutting machines.....	A. Van Haagen.....	Cincinnati, Ohio.....	July 31, 1855.
12485	Soda-water apparatus.....	Marcus F. Hyde.....	Burlington, N. J.....	Mar. 6, 1855.
12489	Soda fountains, combination of an air chamber, water-cooler, and force-pump in.	Newton D. Robins.....	Edinburgh, Ind.....	Mar. 6, 1855.

13067	Soda-water generator.....	William Gee.....	New York, N. Y.....	June 12, 1855.
12846	Starch, apparatus for manufacturing.....	Frederick V. Duryea, assignor to Oswego River Starch Co.....	Oswego, N. Y.....	May 6, 1855.
13340	Starch making.....	Henry Colgate.....	Jersey City, N. J.....	July 24, 1855.
12852	Stills, rosin.....	Francis Bowman.....	Somerville, Mass.....	May 16, 1855.
12719	Sugar, processes for making.....	Conrad W. Finsel.....	Bristol, England.....	April 17, 1855. English patent dated May 7, 1853.
12903	Sugar, apparatus for draining.....	John Aspinall.....	London, England.....	July 10, 1855.
13740	Sugar-filterers.....	Charles E. Bertrand.....	New York, N. Y.....	Oct. 30, 1855.
12369	Tanneries, working liming vats in.....	L. W. Fiske.....	Louisville, Ky.....	Feb. 6, 1855.
13010	Vapor, hydrouarbon, apparatus.....	Samuel T. McDougall.....	Brooklyn, N. Y.....	June 5, 1855.
13657	Vinegar rooms, and white lead corroding chambers, mutual arrangement of. Washing and bleaching, fibrous and textile substances, apparatus for. (See Class III.)	Robert Rowland.....	St. Louis, Mo.....	Oct. 9, 1855.
12333	Zinc white, construction of furnaces for..	Jonathan G. Trotter.....	Newark, N. J.....	Jan. 30, 1855.
12418	Zinc white, separating, apparatus for.....	Samuel Witherill.....	Bethlehem, Pa.....	Feb. 20, 1855.
12613	Zinc white, manufacture of.....	Smith Gardner, assignor to American White Zinc Co., assignors to Charles T. Pierson, assignor to Edw. Kellogg.....	New York, N. Y.....	Mar. 27, 1855.
13416	Zinc white, making.....	John E. Burrows.....	Newark, N. J.....	Aug. 14, 1855.
13431	Zinc white, making.....	Samuel T. Jones.....	New York, N. Y.....	Aug. 14, 1855.
13906	Zinc white, processes for making.....	Samuel Wetherill.....	Newark, N. J.....	Nov. 13, 1855.

CLASS V.—CALORIFICS, comprising lamps, fire-places, stoves, grates, furnaces for heating buildings, cooling apparatus, preparation of fuel, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
19409	Burners, fluid.....	Yarnall Bailey.....	West Chester, Pa.....	Feb. 20, 1855.
12936	Burning fluids.....	Abraham Geener, assignor to "The Asphaltic Mining and Kerosene Gas Company," assignors to Abraham Geener, assignor to "North American Kerosene Gas-Light Company."	New York, N. Y.....	May 22, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12987	Burning-fluid compounds. ....	Abraham Gesner, assignor to "The Asphaltic Mining and Kerosene Gas Company," assignors to Abraham Gesner, assignor to "North American Kerosene Gas-Light Company."	New York, N. Y. ....	May 29, 1855.
13450	Candlesticks. ....	C. W. Blakeslee. ....	Northfield, Conn. ....	Aug. 21, 1855.
13452	Cans, sealing. ....	Wm. Burnet. ....	Cincinnati, Ohio. ....	Aug. 21, 1855.
13660	Cartridges, fire-extinguishing, applying. ....	Wm. Mt. Storm. ....	New York, N. Y. ....	Oct. 9, 1855.
12404	Chimney-safes. ....	George B. Clarke. ....	Leonardville, N. Y. ....	Feb. 20, 1855.
13520	Chimney-stack or cap. ....	Morimer M. Camp. ....	New Haven, Conn. ....	Sept. 4, 1855.
13630	Chimney-stack. ....	Benjamin F. Miller. ....	New York, N. Y. ....	Oct. 2, 1855.
13772	Chimney-cap. ....	John W. Davies. ....	Richmond, Va. ....	Nov. 6, 1855.
12486	Coal-screen. ....	George Martz. ....	Pottsville, Pa. ....	Mar. 6, 1855.
13083	Coal-screen. ....	James P. Fennell. ....	Philadelphia, Pa. ....	June 19, 1855.
13699	Coal-sifters. ....	John B. Creemer. ....	Philadelphia, Pa. ....	Oct. 23, 1855.
13831	Coal-sifters. ....	Gerard Sickels. ....	Brooklyn, N. Y. ....	Nov. 20, 1855.
12167	Cooking-apparatus, flues and dampers of, arrangement of. (See Stoves.) Dryers, fruit. ....	Russell S. Morse. ....	East Dixfield, Me. ....	Jan. 2, 1855.
12922	Drying, cooling and, flour. (See Class XIII.) Drying grain, apparatus for. ....	Thomas F. Rowland, James Stevens, and William H. Mason. George H. Thomas. ....	Brooklyn, N. Y. ....	May 22, 1855.
13832	Evaporating pans, &c., method of inserting tubes in. ....	D. & J. R. Pollock. ....	Kingston, Mass. ....	Nov. 20, 1855.
13100	Fan-blower. ....	J. C. Gartley and Jacob Fox. ....	Lancaster, Pa. ....	June 19, 1855.
13260	Fan-blower. ....	Simon Barnhart. ....	Philadelphia, Pa. ....	July 17, 1855.
13346	Fan-blower. ....	Nathaniel Waterman. ....	Chillicothe, Ohio. ....	July 31, 1855.
13859	Feet-warmers. ....	H. Forncrook. ....	Boston, Mass. ....	Nov. 27, 1855.
13871	Feet-warmers. ....	John R. Adams. ....	Ellbridge, N. Y. ....	Dec. 4, 1855.
12773	Fire-engine. ....	John R. Adams. ....	Port Jervis, N. Y. ....	May 1, 1855.

12491	Fire-place..... Fire-wood, &c., machine for sawing. (See Class XIV.) Fire-wood, machine for splitting. (See Class XIV.)	Jno. W. Smith and Jno. S. Gallaher, Jr....	Washington City, D. C.....	Mar. 8, 1855.
13768	Fires, composition for kindling.....	B. O. Rully.....	New York, N. Y.....	Nov. 6, 1855.
12159	Fuel, composition for.....	St. John O. Doris.....	Philadelphia, Pa.....	Jan. 2, 1855.
12847	Fuel, artificial.....	Thomas Hooker and Wm. D. Beaumont, assignors to A. A. Drey, N. M. Harris, E. C. Lenwyne, J. R. Jennings, G. G. Kirk, and L. A. Kirk.....	New Orleans, La.....	May 8, 1855.
13056	Fuel, artificial.....	Wm. D. Beaumont.....	Mobile, Ala.....	June 12, 1855.
12277	Furnaces, hot-air.....	Michael Greenebaum.....	Chicago, Ill.....	Jan. 23, 1855.
12286	Furnaces, apparatus for supplying with pulverized material.	Eloy Schmitz.....	New York, N. Y.....	Jan. 23, 1855.
12305	Furnace, hot-air.....	Abel H. Bartlett.....	King's Bridge, N. Y.....	Jan. 30, 1855.
12448	Furnace, hot-air.....	George S. G. Spence.....	Boston, Mass.....	Feb. 27, 1855.
12425	Furnaces, air heater.....	William Sage.....	Durham, Conn.....	Feb. 20, 1855.
12533	Furnaces, air-heating.....	James H. Sutton.....	Honedale, Pa.....	Mar. 13, 1855.
12546	Furnaces, feeding fuel to.....	Howard Delano.....	Syracuse, N. Y.....	Mar. 20, 1855.
12602	Furnaces, charcoal.....	John McNeill.....	New York, N. Y.....	Mar. 27, 1855.
12678	Furnaces for burning wet fuel.....	Moses Thompson.....	Henrico county, Va.....	April 10, 1855.
12749	Furnaces for locomotives.....	O. W. Bayley, assignor to the Manchester Locomotive Works.....	Manchester N. H.....	April 17, 1855.
12800	Furnaces for heating wrought-iron wheels for forging.	William R. Thomson.....	Cleveland, Ohio.....	May 1, 1855.
12807	Furnace for burning bagasse.....	Elizabeth A. Stillman, administratrix of Alfred Stillman, deceased.....	New York, N. Y.....	May 1, 1855.
12875	Furnace, hot-air.....	S. J. Russell.....	Chicago, Ill.....	May 15, 1855.
12883	Furnace grate-bar.....	Robert Wicks.....	New York, N. Y.....	May 15, 1855.
12901	Furnace, warm-air.....	M. B. Dyott.....	Philadelphia, Pa.....	May 22, 1855.
12967	Furnaces, grate-bars for.....	Jacob C. Schlough.....	Easton, Pa.....	May 29, 1855.
13015	Furnace for warming buildings.....	George S. G. Spence.....	Boston, Mass.....	June 5, 1855.
13031	Furnaces, supplying with hot air.....	Calvin Fletcher.....	Cincinnati, Ohio.....	June 12, 1855.
13092	Furnace, hot-air..... (See Class VI.) Furnace, steam-boiler. (See Class VI.)	John L. Kite.....	Philadelphia, Pa.....	June 19, 1855.
13332	Furnaces for treating zinc ores..... Furnaces for zinc whites, construction of. (See Class IV.)	Samuel T. Jones.....	New York, N. Y.....	July 24, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13374	Furnaces, hot-air.....	Samuel N. Briggs.....	Providence, R. I.....	July 31, 1855.
13432	Furnaces for heating buildings.....	Joseph Leeds.....	Philadelphia, Pa.....	Aug. 14, 1855.
13439	Furnaces for heating buildings.....	Samuel B. Sexton.....	Baltimore, Md.....	Aug. 14, 1855.
13526	Furnaces, heating, consuming escape-steam as an adjunct in.....	Thomas Maskell.....	Franklin, La.....	Sept. 4, 1855.
13535	Furnaces, hot-air, apparatus to prevent an over-supply of coal to the fire-box of.....	Lewis M. Leeds.....	Germantown, Pa.....	Sept. 4, 1855.
13873	Furnaces, bagasse.....	Samuel H. Gilman.....	New Orleans, La.....	Dec. 4, 1855.
13887	Furnaces, self-regulating, hot-blast for ..	Charles Schinz.....	Camden, N. J.....	Dec. 4, 1855.
12667	Gas-heater.....	William F. Shaw.....	Boston, Mass.....	Jan. 23, 1855.
	Gas-holders. (See Class IV.)			
	Gas, illuminating, apparatus for purifying. (See Class IV.)			
12515	Gas-burners, valves for.....	Andrew Mayer.....	Philadelphia, Pa.....	Mar. 13, 1855.
12717	Gas-generator, putting a, in a parlor stove.	Solomon B. Ellithorp.....	Elmira, N. Y.....	April 17, 1855.
13130	Gas-burners.....	Charles H. Johnson.....	Boston, Mass.....	June 26, 1855.
13134	Gas-lighter.....	William Wiler and Lucien Moss.....	Philadelphia, Pa.....	June 26, 1855.
13233	Gas-burning gridirons.....	Edward D. Willard.....	Washington, D. C.....	July 17, 1855.
13739	Gas-brackets.....	John R. Hunter, assignor to S. B. Blair.....	Baltimore, Md.....	Oct. 30, 1855.
13789	Gas-burners, Argand.....	Charles H. Johnson.....	Boston, Mass.....	Nov. 13, 1855.
13904	Gas apparatus.....	Jno. S. Gallaher, Jr., and Jno. W. Smith.....	Washington, D. C.....	Dec. 11, 1855.
12509	Gas-regulators.....	J. W. Hoard.....	Providence, R. I.....	Mar. 13, 1855.
12692	Gas-regulators.....	Samuel P. Parham.....	Trenton, N. J.....	April 10, 1855.
12844	Gas-regulators.....	G. B. Woodruff and J. N. Palmer.....	New Haven, Conn.....	May 8, 1855.
12943	Gas-regulators.....	Samuel W. Brown.....	Lowell, Mass.....	May 29, 1855.
13020	Gas-regulators.....	Hiram Wheelock.....	Boston, Mass.....	June 5, 1855.
13210	Gas-regulators.....	Samuel W. Brown.....	Lowell, Mass.....	July 10, 1855.
13377	Gas-regulators.....	Samuel W. Brown.....	Lowell, Mass.....	Aug. 7, 1855.
13437	Gas-regulators.....	Stephen P. Ruggles.....	Boston, Mass.....	Aug. 14, 1855.
13700	Gas-regulators.....	Julius C. Dickey.....	Saratoga Springs, N. Y.....	Oct. 23, 1855.
12597	Grate-bar.....	Jos. H. Kirk and Wm. H. Elliot.....	Plattsburg, N. Y.....	Mar. 27, 1855.
13669	Grate-bars, interlocking.....	Samuel Vanuytsel.....	Jersey City, N. J.....	Oct. 9, 1855.

14007	Grates, revolving.....	Charles Evans, assignor to C. Evans and G. K. Goodwin.	Charlestown, Mass.	Dec. 25, 1855.
12239	Heater, air. (See Furnaces).....	William Sage.....	Durham, Conn.	Feb. 20, 1855.
12384	Lamp-shades.....	Michael B. Dyott.....	Philadelphia, Pa.	Jan. 16, 1855.
12390	Lamp-extinguishers.....	Josiah H. Noyes.....	Abington, Mass.	Feb. 13, 1855.
12650	Lamps.....	F. C. Rider.....	Providence, R. I.	Mar. 13, 1855.
12646	Lamp-shades, protector for.....	Elbridge Harris.....	Boston, Mass.	Mar. 20, 1855.
12614	Lamps for burning-fluid.....	Chas. and Anna C. Wilhelm.....	Philadelphia, Pa.	April 3, 1855.
13170	Lamp, lard.....	Dexter H. Chamberlain.....	West Roxbury, Mass.	May 8, 1855.
12549	Lamp, rosin-oil.....	Jas. D. Hays.....	West Morris, Ill.	July 3, 1855.
13537	Lamp-case, locomotive.....	Francis Blake.....	Needham, Mass.	July 17, 1855.
13674	Lamps, Argand.....	Salmon Bidwell.....	Rochester, N. Y.	Sept. 4, 1855.
13675	Lamps, lard.....	John G. Webb.....	Brooklyn, N. Y.	Oct. 9, 1855.
13723	Lamps.....	J. S. Brown, assignor to Jos. Kent.....	Washington, D. C.	Oct. 9, 1855.
13729	Lamps for burning volatile liquids.....	J. Stuber and T. Hardin.....	Utica, N. Y.	Oct. 30, 1855.
13860	Lamp, fluid.....	E. N. Horsford and J. R. Nichols.....	Haverhill, Mass.	Oct. 30, 1855.
13910	Lamps, extinguishers to, mode of attaching.....	William Bennett, assignor to "The Union India-rubber Lamp Company."	Brooklyn, N. Y.	Nov. 27, 1855.
13972	Lamp-extinguishers.....	F. A. Jewett.....	Abington, Mass.	Dec. 11, 1855.
12900	Lanterns, (entry-lights).....	E. Richmond, assignor to Ira Noyes.....	Abington, Mass.	Dec. 18, 1855.
12291	Lanterns.....	Charles W. Felt.....	Salem, Mass.	Jan. 9, 1855.
12324	Lantern-frames.....	Lewis Hoover.....	Jersey City, N. J.	Jan. 23, 1855.
13250	Lanterns.....	Elijah F. Parker.....	Proctorville, Vt.	Jan. 30, 1855.
13286	Lanterns.....	C. H. Butterfield.....	South Lancaster, Mass.	July 17, 1855.
13539	Lantern-guards.....	Charles Waters.....	Brooklyn, N. Y.	July 17, 1855.
13577	Lanterns for locomotives.....	C. H. Butterfield.....	South Lancaster, Mass.	Sept. 11, 1855.
14006	Lantern, guards for.....	James H. Kelly.....	Rochester, N. Y.	Sept. 18, 1855; June 20, 1856.
12209	Ovens, coke.....	C. H. Butterfield, assignor to Amory Houghton.....	Nashua, N. H.	Dec. 25, 1855.
13375	Ovens.....	Guillaume Lambert.....	Boston, Mass.	Jan. 9, 1855.
13555	Ovens for baking bread and other aliments.....	Amory Houghton.....	Mons, Province of Hainaut, Belgium.	Jan. 9, 1855.
13717	Ranges, cooking, and air-heaters.....	John P. Hayes.....	Philadelphia, Pa.	July 31, 1855.
13502	Refrigerators.....	Jean Louis Rolland.....	Paris, France	Nov. 27, 1855; French patent dated June 30, 1851.
12932	Safes, fire-proof, composition for filling in.....	Julius Fink.....	Philadelphia, Pa.	Oct. 30, 1855.
13539	Steam, heating buildings by, apparatus for.....	D. W. C. Sandford.....	Cincinnati, Ohio.	Nov. 13, 1855.
		David Weiser.....	Milwaukee, Wis.	May 15, 1855.
		Charles Davenport.....	Watertown, Mass.	Oct. 9, 1855.

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## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13654	Steam-heating apparatus, radiators of....	A. S. Pelton.....	Clinton, Conn.....	Oct. 9, 1855.
13842	Steam-heating apparatus.....	Pliny E. Chase.....	Philadelphia, Pa.....	Nov. 27, 1855.
12382	Stove, magazine, smoke-consuming.....	James Easterly.....	Albany, N. Y.....	Feb. 13, 1855.
	Stove, parlor, putting a gas-generator in a (See Class VI.)			
12434	Stoves, gas cooking.....	James B. Blake.....	Worcester, Mass.....	Feb. 27, 1855.
12474	Stoves, cook.....	J. J. Anderson.....	Beaver, Pa.....	Mar. 6, 1855.
12639	Stove-pipe tube.....	Thomas Moore.....	Fair Haven, Vt.....	April 3, 1855.
13728	Stoves.....	William Mootry.....	New York, N. Y.....	Oct. 30, 1855.
12741	Stoves, gas cooking.....	Andrew Mayer.....	Philadelphia, Pa.....	April 17, 1855.
12758	Stoves, &c.....	J. Johnson and J. E. Crane.....	Lowell, Mass.....	April 24, 1855.
12913	Stove, cook, air-heating.....	Charles B. Loveless.....	Boston, Mass.....	May 22, 1855.
13113	Stove-pipes, joints for.....	Alva Worden.....	Ypsilanti, Mich.....	June 19, 1855.
13194	Stoves.....	Robert Wilson.....	Columbus City, Iowa.....	July 3, 1855.
13314	Stoves, parlor.....	Francis Kenney.....	Springfield, Mass.....	July 24, 1855.
13589	Stoves, cooking.....	John Van.....	St. Louis, Mo.....	Sept. 15, 1855.
13686	Stoves (arrangement of flues and damp- ers of cooking apparatus.)	John A. Elder and Wm. J. Thorn.....	Westbrook, Me.....	Dec. 4, 1855.
13771	Stoves, cooking.....	Joseph B. Lancaster, administrator of John K. Lancaster, deceased.	Holliston, Mass.....	Dec. 18, 1855.
12306	Ventilator, car.....	B. F. Babbitt.....	Tampa, Fla.....	Jan. 30, 1855.
12534	Ventilators, apparatus for operating.....	Isaac P. Trimble.....	New York, N. Y.....	Mar. 13, 1855.
12541	Ventilation, self, method of, for railroad cars.	V. P. Corbett.....	Livingston, N. Y.....	Mar. 20, 1855.
12918	Ventilators, railroad car.....	D. H. Fox and John Fink.....	Corbettville, N. Y.....	May 8, 1855.
12927	Ventilating railroad cars.....	William Pauli.....	Reading, Pa.....	May 8, 1855.
12951	Ventilating and cooling apparatus.....	Job R. Barry.....	Alexandria, Va.....	May 15, 1855.
12992	Ventilator, ship.....	Ernest Bahr.....	Philadelphia, Pa.....	May 15, 1855.
13204	Ventilating railroad cars.....	Charles Atwood.....	Rochester, N. Y.....	June 5, 1855.
13542	Ventilating, self-regulating valve for.....	John Clark.....	Birmingham, Conn.....	July 10, 1855.
13725	Ventilating railroad cars, method of.....	W. L. B. Lewis.....	Cambridge township, Pa.....	Sept. 11, 1855.
13732	Ventilating railroad cars.....	J. K. Taylor.....	Philadelphia, Pa.....	Oct. 30, 1855.
			Binghamton, N. Y.....	Oct. 30, 1855.

CLASS VI.—STEAM AND GAS ENGINES, including boilers and furnaces therefor, and parts thereof.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12261	Boilers, steam, arrangement of filtering apparatus to prevent incrustation in.	Gustavus Weissenborn.....	New York, N. Y.....	Jan. 16, 1855.
12360	Boilers, steam.....	Thomas Champion.....	Washington, D. C.....	Feb. 6, 1855.
12385	Boiler, steam, chimneys.....	Asahel Fairchild.....	Ashland, Ohio.....	Feb. 13, 1855.
12654	Boilers, steam, arrangement of means for freeing from sediment.	Hiram Strait.....	Covington, Ky.....	April 3, 1855.
12665	Boilers, steam.....	Horace Boardman.....	Plattsburgh, N. Y.....	April 10, 1855.
12673	Boilers, locomotive.....	Joshua J. Dutcher.....	New Haven, Conn.....	April 10, 1855.
12835	Boilers, steam, apparatus for regulating supply of water to.	Thomas J. Sloan.....	New York, N. Y.....	May 8, 1855.
12893	Boilers, steam.....	Thomas G. Boone.....	Brooklyn, N. Y.....	May 22, 1855.
12993	Boilers, steam, feeding water to.....	Thomas (Champion).....	Washington, D. C.....	June 5, 1855.
13111	Boilers, steam.....	Charles F. Thomas.....	Taunton, Mass.....	June 19, 1855.
13146	Boiler, steam, furnace.....	Thomas Champion.....	Washington, D. C.....	June 26, 1855.
13168	Boilers, steam.....	Jacob Harselman.....	Dayton, Ohio.....	July 3, 1855.
13193	Boilers, steam, apparatus for heating feed-water to.	Robert Wilson.....	Columbus City, Iowa.....	July 3, 1855.
13223	Boilers, steam.....	James Murphy.....	New York, N. Y.....	July 10, 1855.
13298	Boilers, steam, feeding water to, by auxiliary engines.	William Ball.....	Chicopee, Mass.....	July 24, 1855.
13363	Boilers, steam, water-gauges for.....	Paul Stillman.....	New York, N. Y.....	July 31, 1855.
13425	Boilers, steam.....	J. J. Dutcher.....	New Haven, Conn.....	Aug. 14, 1855.
13498	Boilers, steam, method of facilitating the removal of incrustation from.	Frederick P. Dimpfel.....	Philadelphia, Pa.....	Aug. 28, 1855.
13567	Boilers, steam, feed-water apparatus of.....	Joel Denamore.....	Bloomington Valley, Pa.....	Sept. 18, 1855.
13593	Boilers, steam, safety apparatus for.....	John M. Reeder.....	Nashville, Tenn.....	Sept. 18, 1855.
13619	Boilers, steam.....	Charles Moore.....	Trenton, N. J.....	Oct. 2, 1855.
13761	Boilers, steam.....	H. N. Pettigill.....	Rockford, Ill.....	Nov. 6, 1855.
13903	Boilers, steam, water-gauges for.....	Josephus Echols.....	Columbia, Ga.....	Dec. 11, 1855.
13983	Boiler, steam, furnaces.....	Henry F. and Louis Goalin.....	La.....	Dec. 25, 1855.
13249	Engines, air and steam.....	Francis B. Blanchard.....	Waterville, Me.....	July 10, 1855.
13348	Engines, air.....	John Ericsson.....	New York, N. Y.....	July 31, 1855.



## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12715	Engines, explosive gas .....	Alfred Drake .....	Philadelphia, Pa. ....	April 17, 1855.
12898	Engines, gas, method of actuating .....	William Mt. Storm .....	New York, N. Y. ....	Sept. 25, 1855.
12916	Engines, oscillating .....	John A. Reed .....	New York, N. Y. ....	Jan. 9, 1855.
12999	Engines, oscillating .....	George F. Wood .....	Ulysses, N. Y. ....	Jan. 23, 1855.
12726	Engines, rotary .....	Abraham Mason .....	Philadelphia, Pa. ....	April 17, 1855.
12746	Engines, rotary .....	John J. Thomas .....	Manayunk, Pa. ....	April 17, 1855.
13107	Engines, rotary .....	Sylvester Stevens .....	Boston, Mass. ....	June 19, 1855.
13550	Engines, rotary .....	Christian E. Offhaus .....	Newark, N. J. ....	Sept. 11, 1855.
13763	Engines, steam, rotary .....	E. Matteson .....	Dayton, N. Y. ....	Nov. 6, 1855.
13786	Engines, rotary .....	W. M. and H. Parriss .....	Dorset, Vt. ....	Nov. 13, 1855.
13179	Engines, steam, arrangement in double piston .....	John H. Hathaway .....	Millbury, Mass. ....	Jan. 2, 1855.
13187	Engines, steam, crank connexion in double piston .....	Warren S. Burgess .....	Norristown, Pa. ....	Jan. 2, 1855.
12619	Engines, steam, condensers for .....	John Smith .....	Cincinnati, Ohio .....	Jan. 2, 1855.
12947	Engines, vapor .....	Louis Bollman .....	New York, N. Y. ....	April 3, 1855.
13019	Engine, steam, regulators .....	W. W. Hubbell and D. Matthew .....	Philadelphia, Pa. ....	May 22, 1855.
13202	Engine, marine, steam-governors .....	Henry Webster .....	Beetown, Wis. ....	June 5, 1855.
13415	Engines, &c., steam, governors for .....	Thomas Silver .....	Philadelphia, Pa. ....	July 3, 1855.
13646	Engines, boring, portable .....	John and Evan Arthur .....	New Brunswick, N. J. ....	Aug. 14, 1855.
13721	Engines, steam, surface condensers for .....	Thomas Goodrum .....	Providence, R. I. ....	Oct. 9, 1855.
13748	Engines, two-beam, with parallel shafts, arrangement of .....	Peter Hogg .....	New York, N. Y. ....	Oct. 30, 1855.
13917	Engines, steam, packing pistons for, .....	Thomas Doyle .....	New York, N. Y. ....	Nov. 6, 1855.
13934	Engines, steam, variable cut-off gear for .....	Joel W. Pettis .....	Hilldale, Mich. ....	Dec. 11, 1855.
	Engines, locomotive, arrangement of exhaust pipes in. (See Locomotives.)	W. W. Wade, assignor to himself and Chas. Burnham.	Springfield, Mass. ....	Dec. 11, 1855.
	Engines, locomotive, apparatus for heating feed-water to. (See Locomotives.)	John Williams .....	Dunkirk, N. Y. ....	Mar. 6, 1855.
		David Matthew .....	Philadelphia, Pa. ....	July 17, 1855.

13468	Engines, locomotive, various. (See Locomotives.) Gauges, pressure ..... Governors, combination of speed and re- sistance. (See Class IX.) Locomotives, arrangement of exhaust- pipes in. Locomotives, means for increasing draughts in. Locomotive lamp-case. (See Class V.) Locomotives, apparatus for heating feed- water to. Locomotives, variable exhaust of..... Locomotives, arrangement of means for regulating the discharge of exhaust steam in. Locomotives, exhaust pipes of, nozzle for. Packing for stuffing-boxes, &c..... Packing pistons for steam engines. (See "Engines," Class VI.) Spark-arresters..... Spark-arresters ..... Spark-arresters ..... Steam-apparatus for extracting vegetable oils. (See Class IV.) Steam boilers. (See Boilers)..... Steam-generators ..... Steam-generators ..... Steam gauge-cocks ..... Steam, economizing ..... Steam-pressure regulators, elastic dis- phragm. Valves, slide, operating, in direct-action { engines. Valve, slide, and exhaust passages, ar- rangement of, in steam-engines. Valves, steam..... Valves, cut-off, for steam-engines.....	John Matthews, Jr..... John Williams..... Charles F. Thomas ..... David Matthew ..... Samuel L. Hay..... John E. Wooten..... W. E. Cooper..... Joseph H. Tuck ..... Gilbert Richards..... David Matthew..... David Matthew..... Daniel Deahon, 2d..... Thomas Champion..... Wm Mt. Storm..... Alexander B. Latta..... Albert Hisebe..... George M. Longacre..... Joseph Woodruff..... George W. Hubbard and William E. Conant..... Wm. C. Hicks..... John Tremper..... Noble T. Greene.....	New York, N. Y. .... Dunkirk, N. Y..... Taunton, Mass..... Philadelphia, Pa..... Reading, Mass..... Philadelphia, Pa..... Dunkirk, N. Y..... Citizen of U. S., residing at Pall- Mall, England. Cummington, Mass..... Philadelphia, Pa..... Philadelphia, Pa..... Whitestown, N. Y..... Washington, D. C..... New York, N. Y..... Cincinnati, Ohio..... Chelsea, Mass..... New Orleans, La..... Rahway, N. J..... Brooklyn, N. Y..... Greenpoint, N. Y..... Hartford, Conn..... Philadelphia, Pa..... Bridgeport, Conn.....	Aug. 21, 1855. Mar. 6, 1855. July 10, 1855. July 17, 1855. Oct. 9, 1855. May 1, 1855. Dec. 18, 1855. June 26, 1855. May 8, 1855. May 15, 1855. May 22, 1855. July 10, 1855. Feb. 6, 1855. Feb. 6, 1855. April 10, 1855. Sept. 16, 1855. Oct. 9, 1855. Oct. 23, 1855. Jan. 9, 1855. Jan. 9, 1855. Feb. 13, 1855. Mar. 13, 1855.
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## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12564	Valve-gearing for steam-engines.....	H. Uhry and H. A. Luttgens.....	Paterson, N. J.....	Mar. 20, 1855.
12592	Valves, operating, in direct-acting steam-engines.	Wm. H. Guild and Wm. F. Garrison....	Brooklyn, N. Y.....	Mar. 27, 1855.
12624	Valves for steam-engines.....	Thomas Goodrum.....	Providence, R. I.....	April 3, 1855.
12729	Valve, cut-off, gear.....	John B. Schenck.....	Ansonia, Conn.....	April 17, 1855.
12573	Valves, steam-engine.....	John A. Reed.....	New York, N. Y.....	May 15, 1855.
12904	Valve-gear for oscillating engines.....	M. D. Du Bois.....	Newburg, N. Y.....	May 22, 1855.
12966	Valves, cut-off.....	David Stoddart.....	Cincinnati, Ohio.....	May 29, 1855.
13125	Valves, balance.....	Chas. S. Harris.....	Holyoke, Mass.....	June 26, 1855.
12576	Valves, steam-engine, cross-head attachment for working.	Jno. B. Stoot and Alexr. Ferguson.....	Troy, N. Y.....	July 17, 1855.
13328	Valves, oscillating, and gearing for pumping engines.	C. A. Wilson.....	Newport, Ky.....	July 24, 1855.
13359	Valves, cut-off, for steam-engines.....	Frederick Perry.....	Newark, N. J.....	July 31, 1855.
13369	Valves, steam, method of operating.....	Norman W. Wheeler.....	Cincinnati, Ohio.....	July 31, 1855; antedated March 1, 1855.
13498	Valve, regulating, for steam-engines.....	E. G. Russell.....	Ravenna, Ohio.....	Aug. 28, 1855.
13527	Valves for regulating steam-engines.....	Philip W. McKenzie.....	Jersey City, N. J.....	Sept. 4, 1855.
13637	Valves, cut-off, for oscillating engines.....	Henry E. Canfield.....	New York, N. Y.....	Oct. 9, 1855.
13589	Valve, regulator, and governors' stem, means of connexion between.	John Tremper.....	Philadelphia, Pa.....	Dec. 4, 1855.
13923	Valves, slide, for steam-engines.....	E. D. Leavitt, jr.....	Lowell, Mass.....	Dec. 11, 1855.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12435	Anchor-tripper.....	Samuel R. Bryant.....	New York, N. Y.....	Feb. 27, 1855.
12622	Anchors.....	Richard V. De Guinon.....	Brooklyn, N. Y.....	April 3, 1855.
13847	Anchor-stoppers, cat-head.....	Peter H. Jackson.....	New York, N. Y.....	Nov. 27, 1855.
13891	Blocks, hoisting.....	William H. Merrill.....	Taunton, Mass.....	Dec. 25, 1855.
12360	Boats, life, fording. (See Life-boats.)	Henry T. Dexter.....	Zanesville, Ohio.....	Feb. 13, 1855.
13315	Boats, wharf.....	Edwin B. Larcher.....	Baltimore, Md.....	July 24, 1855.
13510	Boats, gutta pe cha, making.....	Nathan Thompson, jr.....	Williamsburgh, N. Y.....	Aug. 28, 1855; English patent dated Feb. 23, 1856.
12703	Boat, life, sofa. (See Life-boats.)			
12395	Cabin chairs.....	William Thomas.....	Hingham, Mass.....	April 10, 1855.
13593	Cable-stoppers.....	Jesse Reed.....	Marshfield, Mass.....	Jan. 30, 1855.
13760	Cables, chain, pressure-stoppers for.....	James Emerson.....	Worcester, Mass.....	Sept. 25, 1855.
12143	Chain-locker pipes.....	Charles Perley.....	New York, N. Y.....	Nov. 6, 1855.
12220	Life-preserving rafts.....	Farnham Z. Tucker.....	Brooklyn, N. Y.....	Jan. 2, 1855.
	Life-preserving seats.....	Nathan Thompson, jr.....	Williamsburgh, N. Y.....	Jan. 9, 1855; English patent dated Oct. 1, 1854.
12375	Life-boats.....	Hiram Berdan.....	New York, N. Y.....	Feb. 13, 1855.
12405	Life-saving rafts.....	George Blanchard.....	Washington, D. C.....	Feb. 20, 1855.
12450	Life-preserver, bed-boat, or.....	Joseph Stevenson.....	Philadelphia, Pa.....	Feb. 27, 1855.
12473	Life-boats.....	John Allen.....	New York, N. Y.....	Mar. 6, 1855.
12537	Life-boats, folding.....	Edward L. Berthon.....	Farnham, England.....	Mar. 20, 1855; English patent dated June 12, 1851.
12743	Life-preserving doors.....	J. T. Phœatt.....	Toledo, Ohio.....	April 17, 1855.
13134	Life-boats, fording.....	C. Locher.....	New York, N. Y.....	Jan. 2, 1855.
13546	Life-preserving beds for ships.....	George K. Hooper.....	Boston, Mass.....	Sept. 11, 1855.
13771	Life-boats, sofa.....	Peter Van Zile, Searies M. Griffin, and J. W. S. Dey.....	New York, N. Y.....	Nov. 6, 1855.
13994	Log and sounding-line, combined.....	Adolphe Péconle.....	Marcellies, France.....	Dec. 25, 1855.
12298	Paddle-wheels.....	John U. Wallis.....	Danville, N. Y.....	Jan. 23, 1856.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12460	Paddle-wheels, method of arranging and operating submerged horizontal.	Peter Lear.....	Boston, Mass.....	Feb. 27, 1855.
12621	Paddle-wheel, adjustable	Levi M. Dehart.....	Reading, Pa.....	April 3, 1855.
12640	Paddle-wheels.....	Frederick W. Capen.....	Newtown, Mass.....	Dec. 18, 1855.
12668	Paddle wheels, buckets of.....	Augustus M. Glover.....	Waterborough, S. C.....	June 12, 1855.
13190	Paddle-wheels.....	John Upham Wallis.....	Danville, N. Y.....	July 3, 1855.
13068	Paddle-wheels.....	Benjamin Hill.....	Dorchester, N. Y.....	Dec. 26, 1855.
12190	Propeller.....	Charles De Berque.....	Dowgate Hill, England.....	Jan. 9, 1855; English patent dated April 6, 1854.
12446	Propellers.....	Franklin Peale.....	Philadelphia, Pa.....	Feb. 27, 1855.
12752	Propellers.....	William D. Jones, assignor to Henry Whinfield.....	Poughkeepsie, N. Y.....	April 17, 1855.
12923	Propeller.....	Henry Link.....	Little Falls, N. Y.....	May 8, 1855.
12956	Propellers, buoyant.....	William Lansdell.....	Memphis, Tenn.....	May 23, 1855.
13041	Propellers.....	Joseph H. Penny and Thomas B. Rogers.....	New York, N. Y.....	June 12, 1855; English patent dated June 14, 1853.
13078	Propeller, railway reciprocating.....	Henry Boynton.....	Hineburgh, Vt.....	June 19, 1855.
13336	Propellers.....	Augustin Duboce.....	Brooklyn, N. Y.....	July 24, 1855.
13394	Propelling vessels by the direct action of steam on the water.	Wm. J. McIndre.....	New York, N. Y.....	Aug. 7, 1855.
12119	Ships, constructing vessels.....	Wm. Ballard.....	New York, N. Y.....	Jan. 2, 1855.
12359	Ships and other vessels, constructing.....	V. P. Corbett.....	Corbettville, N. Y.....	Feb. 6, 1855.
12445	Ships, constructing vessels.....	Z. Pangborn.....	Algonac, Mich.....	Feb. 27, 1855.
13278	Ships, iron, constructing.....	Otis Tufts.....	Boston, Mass.....	July 17, 1855; English patent dated April 2, 1846.
13231	Ships and other vessels, vibrating stop-water for.	Stephen Saunders.....	Kingston, R. I.....	July 10, 1855.
12968	Ships' captains. (See Ships' winches.) Sails, top, reefing.....	W. Shibles, assignor to W. Shibles and Edward O'Brien.....	Thomaston, Me.....	May 23, 1855.
12316	Ship carpenters, rain-staff screws for.....	John Hobbs.....	Hallowell, Me.....	Jan. 30, 1855.

Ship-pumps. (See Class XI.)	Thomas Brown	London, England	April 3, 1855.
Ship-ventilator. (See Class V.)	John S. Robbins	San Francisco, Cal.	Sept. 25, 1855.
Ships' rudders			
Ships' spars, &c., automatic machine for turning. (See Class XIV.)	Fred. Howes	Yarmouth Port, Mass.	Feb. 13, 1855.
Ships' standing rigging	Thomas Batty	Brooklyn, N. Y.	Sept. 4, 1855.
Ships' topmasts, supporting	Thomas Batty	Brooklyn, N. Y.	Dec. 4, 1855.
Ships' yards, suspending	James Emerson	Worcester, Mass.	April 17, 1855.
Ships' windlasses	John B. Holmes, assignor to John B. Pratt	New York, N. Y.	July 17, 1855.
Ships' winches	Peter H. Jackson	New York, N. Y.	Aug. 7, 1855.
Ships' winches	James Emerson	Worcester, Mass.	Aug. 23, 1855.
Ships' windlasses	John B. Holmes, assignor to John B. Pratt and John B. Holmes	New York, N. Y.	Sept. 25, 1855.
Signal flags	Henry J. Rogers	Baltimore, Md.	Jan. 2, 1855.
Steering apparatus	Abijah B. Tewkesbury	Boston, Mass.	Jan. 16, 1855.
Steering apparatus	Jesse Reed	Marshfield, Mass.	Mar. 6, 1855.
Tidal alarm apparatus. (See Class XI.)			
Tree-nail machine	J. W. Hoagland	Jersey City, N. J.	May 22, 1855.
Vessels, apparatus for, to indicate their locality when they sink, and to supply a means of raising them.	Joseph Hyde	New York, N. Y.	Aug. 21, 1855.
Vessels, constructing. (See Ships.)			
Vessels, construction of. (See Ships.)			
Vessels, sunken, mode of raising	Henry V. Corbett	Buffalo, N. Y.	Feb. 27, 1855.
Vessels, method of pumping water out of	Alexander Kirkwood	Elder's Ferry, Miss.	Feb. 27, 1855.
Vessels, sailing, hoop-jacks for	Elmer Foster	Fairton, N. J.	Mar. 13, 1855.
Vessels, steam and other, floating cabins for.	William R. Jackson	Baltimore, Md.	June 5, 1855.
Vessels, sunken, buoys for raising	Elisha Fitzgerald	New York, N. Y.	June 12, 1855.
Wrecking pumps, rotary. (See Class XI.)			

## CLASS VIII.—MATHEMATICAL, PHILOSOPHICAL, AND OPTICAL INSTRUMENTS, INCLUDING CLOCKS, CHRONOMETERS, &amp;c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13900	Adding numbers, machines for.....	Nathaniel S. Saxton.....	Riverhead, N. Y.....	Nov. 13, 1855.
13923	Clock escapement.....	E. K. Reynolds.....	New York, N. Y.....	Oct. 2, 1855.
13341	Clocks, calendar.....	John Williams.....	Hartford, Conn.....	July 24, 1855.
13993	Dividers, proportional.....	H. M. Parkhurst.....	Perth Amboy, N. J.....	Dec. 25, 1855.
	Eye, instruments for modifying focal length of the. (See Class XX.)			
12955	Galvanic batteries, connecting-clamps for the plates of.	Charles T. Chester.....	New York, N. Y.....	May 15, 1855.
13560	Horometers.....	Amos Abbott.....	Manchester, N. H.....	Sept. 11, 1855; English patent dated Sept. 20, 1854.
13584	Latitude and longitude, instrument for determining.	John Stinson.....	Danville, N. J.....	Sept. 18, 1855.
12984	Levels, spirit.....	Hampton W. Evans.....	Philadelphia, Pa.....	Feb. 13, 1855.
13032	Lighting-rods, attachments for.....	Robert D. Dwyer.....	Richmond, Va.....	July 3, 1855.
13933	Measuring-wheels, revolving.....	Louis Young.....	New York, N. Y.....	Nov. 20, 1855.
13803	Optical instruments.....	Robert B. Tolles.....	Canastota, N. Y.....	Sept. 25, 1855.
13451	Pendulum, conical, application of the, to time-keepers.	John C. Briggs.....	Concord, N. H.....	Aug. 21, 1855.
12196	Pendulums, torsion, for time-pieces.....	Aaron D. Crane.....	Newark, N. J.....	Jan. 9, 1855.
13615	Reflector, corrugated.....	Bernard Goetz.....	Philadelphia, Pa.....	Oct. 2, 1855.
12929	Telegraphic key apparatus.....	Leroy S. White and Lewis White.....	Chicopee, Mass.....	May 22, 1855.
13389	Telegraph wires, apparatus for discharging atmospheric electricity from.	John N. Gamewell.....	Hartford, Conn.....	Aug. 7, 1855; English patent dated Sept. 15, 1854.
13519	Telegraphic tide-gauges.....	Alexander Boyd.....	Lumberland, N. Y.....	Sept. 4, 1855.
13665	Telegraphs.....	W. A. Peaslee.....	Indianapolis, Ind.....	Oct. 9, 1855.
12121	Time-keepers, compensation balances for.	Charles W. Hawkes and George P. Reed.....	Boston, Mass.....	Jan. 2, 1855.
13977	Time-indicators.....	George Byington.....	Waltham, Mass.....	Dec. 25, 1855.
			Rochester, N. Y.....	

CLASS IX.—CIVIL ENGINEERING AND ARCHITECTURE, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.

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No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12145	Blinds, sheet-iron.....	William E. Ward.....	Pert Chester, N. Y.....	Jan. 2, 1855.
12281	Blinds (rolling iron shutters).....	Charles Mettam.....	New York, N. Y.....	Jan. 23, 1855.
12292	Blinds, iron window.....	Henry Blakely.....	New York, N. Y.....	Jan. 23, 1855.
12495	Blinds, Venetian window.....	Chas. Rose.....	Allentown, Pa.....	April 10, 1855.
12672	Blinds, (window-shutters).....	George W. Chippa.....	Philadelphia, Pa.....	May 16, 1855.
12740	Blinds, window, adjuster of.....	Alfred A. Starr.....	New York, N. Y.....	June 26, 1855.
13141	Blinds, window, doors, &c.....	L. Stevens and S. B. Ellithorp.....	Elmira, N. Y.....	June 26, 1855.
13251	Blinds, window.....	W. H. Bixler.....	Easton, Pa.....	July 17, 1855.
13300	Blind, window.....	Frank Chase.....	South Sutton, N. H.....	July 24, 1855.
13398	Blinds to windows, mode of adjusting.....	C. E. Parker and J. Sanger.....	Boston, Mass.....	Aug. 7, 1855.
13500	Blinds or shutters for stores.....	David Rohan.....	Watertown, Mass.....	Aug. 28, 1855.
13590	Blind-fastener.....	Daniel E. True.....	Cincinnati, Ohio.....	Dec. 4, 1855.
13660	Blinds, (window-shades).....	Thomas Danforth.....	Lake Village, N. H.....	Dec. 25, 1855.
12303	Boring wells, implements for.....	J. J. W. Adams.....	Roxbury, Mass.....	Jan. 30, 1855.
12663	Boring artesian wells, drills for.....	John Andrews.....	Sharptown, Ind.....	Jan. 30, 1855.
12698	Boring wells, machinery for.....	John F. Manahan.....	Winchester, Mass.....	April 10, 1855.
12706	Boring the earth, implement for.....	C. N. White.....	Lowell, Mass.....	April 10, 1855.
12523	Bridge, ferry safety.....	Henry Lawrence.....	Concord, N. C.....	April 10, 1855.
12562	Bridges, swing.....	John N. King.....	New York, N. Y.....	Mar. 13, 1855.
12558	Bridges, draw, railroad.....	J. R. & W. P. Gamble.....	Hulberton, N. Y.....	May 29, 1855.
13461	Bridges.....	H. L. Hervey and R. E. Osborn.....	Philadelphia, Pa.....	July 17, 1855.
12161	Buildings, iron, fire-proof.....	Emanuel Harmon.....	Springfield, Ohio.....	Aug. 21, 1855.
13379	Buildings, (iron houses).....	D. D. Badger.....	Washington, D. C.....	Jan. 2, 1855.
12633	Cars, coal, apparatus for hoisting and dumping.....	George Martz.....	New York, N. Y.....	Aug. 7, 1855.
12642	Ceiling, floor, fire-proof.....	Frederick A. Peterson.....	Pottsville, Pa.....	April 3, 1855.
12131	Chair, railroad, machines.....	James B. Harris.....	New York, N. Y.....	April 3, 1855.
13313	Chairs, railway, machines for making.....	James Kelren, assignor to himself and George Banks.....	Cincinnati, Ohio.....	Jan. 2, 1855.
12623	Coal-holes, safety-port for.....	Samuel W. Frost.....	Canton, Mass.....	July 24, 1855.
			Boston Mass.....	April 3, 1855.



## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12637	Coal-hole covers.....	F. H. Moore.....	Boston, Mass.....	April 3, 1855.
12638	Ditching-machine. (See Excavating machine.)			
12639	Doors, weather-strips for.....	Alonzo Hitchcock.....	Chicago, Ill.....	Feb. 13, 1855.
12640	Doors.....	Orris C. Hill.....	Malone, N. Y.....	June 19, 1855.
13121	Doors, weather-strips for.....	Martin Croke.....	New York, N. Y.....	June 26, 1855.
13279	Doors and windows, metallic blinds for.....	William E. Worthen.....	New York, N. Y.....	July 17, 1855.
12201	Dredging-machines.....	D. S. Howard.....	Lyonsdale, N. Y.....	Jan. 9, 1855.
12720	Dredging-machines.....	Charles H. Fondé.....	Mobile, Ala.....	April 17, 1855.
12627	Eaves-gutters of houses.....	George W. Wheady.....	Harrodsburg, Ky.....	Mar. 13, 1855.
12234	Excavators.....	Samuel W. Soule.....	Oswego, N. Y.....	July 10, 1855.
12514	Excavating-machine, (ditching-machine).....	Robert C. Mauck.....	Harrisonburg, Va.....	Mar. 13, 1855.
12651	Excavating-machine.....	C. Williams.....	Jackson, Tenn.....	April 3, 1855.
12919	Excavating, submarine, machines.....	Jason C. Osgood.....	Troy, N. Y.....	May 22, 1855.
13282	Excavating-machine.....	Edwin Williams.....	Covington, Ky.....	July 17, 1855.
13680	Excavators.....	Benjamin Hancock.....	Troy, N. Y.....	Oct. 16, 1855.
12921	Fences.....	J. B. Reymann.....	Dubuque, Iowa.....	May 22, 1855.
13644	Fences.....	H. H. Dennis.....	Steann Mill, Pa.....	Nov. 27, 1855.
12701	Friction-rollers, adjustable.....	Thomas and John Sweeney.....	Birmingham, Pa.....	April 10, 1855.
	Gate, automatic, for railroad crossings. (See Railroad.)			
12652	Gates, mechanism by which approaching vehicles open and close.	Enos Woodruff.....	Elizabethtown, N. J.....	April 3, 1855.
12790	Gates, farm.....	Cornelius L. Harsen, and Moses R. Brailley	Norwalk, Ohio.....	May 1, 1855.
12914	Gates, farm.....	Henry B. Lum.....	Sandusky, Ohio.....	May 22, 1855.
12930	Gates, method of closing and opening.....	Caleb Winegar.....	Union Springs, N. Y.....	May 22, 1855.
13109	Gate, circular, self-operating.....	William Thompson.....	Nashville, Tenn.....	June 19, 1855.
13445	Gates, device in opening and closing.....	Caleb Winegar.....	Union Springs, N. Y.....	Aug. 14, 1855.
12658	Gate, farm.....	S. A. Skinner.....	Derby, Vt.....	Oct. 9, 1855.
12673	Gates, farm, method of operating.....	Jno. K. Weber.....	Seneca Falls, N. Y.....	Oct. 9, 1855.
12624	Hatchways, opening and closing, apparatus for.	Henry Sizer and Eliza Stone.....	Lowell, Mass.....	Oct. 2, 1855.

19196	Houses, iron. (See Buildings.)	Jean François Lemoultier.....	New York, N. Y.....	Jan. 9, 1855.
19197	Pavements, constructing.	Chapman, Warner.....	New York, N. Y.....	Jan. 2, 1855.
19198	Pavements, cast-iron.	George Nellson, assignor to himself and Nehemiah Hunt.	Boston, Mass.....	April 17, 1855.
19199	Pavements, cast-iron.	Alexander Holstrom.....	New York, N. Y.....	Jan. 2, 1855.
19200	Pile-driving, atmospheric, apparatus for.	James Fleming.....	Portsmouth, Va.....	May 1, 1855.
19201	Piles, machine for sawing off, under water.	John M. Bull.....	Sidney, Ohio.....	Jan. 23, 1855.
19202	Rails, hand, for stairs.	George B. Pullinger.....	Philadelphia, Pa.....	Dec. 18, 1855.
19203	Railroad-crossings, automatic gate for.	Sophia B. Spafford and Geo. Alexander, administratrix and administrator of Simeon L. Spafford.	Philadelphia, Pa.....	July 10, 1855.
19204	Railroad drawbridge signals.	Jacob Bruser.....	Philadelphia, Pa.....	Aug. 7, 1855.
19205	Railroad signals.	C. M. Eakin.....	West Philadelphia, Pa.....	Mar. 13, 1855.
19206	Railroad rails, excluding dirt from.	J. B. Trimble.....	Baltimore, Md.....	April 10, 1855.
19207	Railways, wooden splice-piece for.	H. D. Searles.....	Rockford, Ill.....	Oct. 10, 1854.
19208	Railroads, guard-rails of, to be used with pronged cow-catchers.	Alpheus Kimball.....	Fitchburg, Mass.....	June 12, 1855.
19209	Roads, machine for repairing.	Samuel Taylor.....	Petersham, Mass.....	Feb. 6, 1855.
19210	Roofs, plank, for buildings.	G. Graciale.....	Hamilton, Ohio.....	June 12, 1855.
19211	Roofing compositions. (See Class IV.)	David Russell.....	Drewersburg, Ind.....	Dec. 11, 1855.
19212	Roofing, tile.	Lyman E. Payne.....	Yazoo City, Miss.....	May 1, 1855.
19213	Sash, window, supporter.	Chas. R. Bode.....	New York, N. Y.....	May 8, 1855.
19214	Sashes, window.	Handell S. Chaplin.....	Glover, Vt.....	May 15, 1855.
19215	Sash-supporters.	William S. Ford.....	New York, N. Y.....	June 12, 1855.
19216	Sash, window, fixtures.	Daniel N. Dunzack.....	Salem, Mass.....	June 26, 1855.
19217	Sashes, window.	Lyman E. Payne.....	Yazoo City, Miss.....	June 26, 1855.
19218	Sashes, window, mode of hanging.	J. W. Ross.....	Zanesville, Ohio.....	Aug. 14, 1855.
19219	Sashes, window, mode of hanging.	Michael Bomberger.....	Hummelstown, Pa.....	Nov. 6, 1855.
19220	Sashes, window, mode of hanging.	E. W. Bullard.....	Hardwick, Mass.....	Nov. 13, 1855.
19221	Sashes, window, hanging.	F. Rudolph.....	New York, N. Y.....	Dec. 4, 1855.
19222	Scaffolds, elevating.	A. C. Funston.....	West Philadelphia, Pa.....	Jan. 2, 1855.
19223	Scaffolds.	Reuben W. Oliver, assignor to E. W. Oliver and H. Hoyt.	Aurora, N. Y.....	June 19, 1855.
19224	Scaffolds, elevating.	P. J. Coogan.....	Charleston, S. C.....	Nov. 13, 1855.
19225	Scrapers, road.			June 5, 1855.
19226	Sewers, arrangement of drains for.			
19227	Shutters, iron, rolling. (See Blinds.)			
19228	Shutters or blinds for stores. (See Blinds.)			

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*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12354	Stalls for horses. (See Class XXII.)	Robert A. Smith and John Hartman, Jr....	Philadelphia, Pa.....	Feb. 6, 1855.
13830	Street-sweeping machine.....	M. W. St. John and J. Brown.....	Leonardsville, N. Y.....	Nov. 20, 1855.
12496	Stumps, mode of extracting.....	W. W. Willis.....	Orange, Mass.....	Mar. 6, 1855.
12525	Stump machines.....	Edward Vaughn.....	Alliance, Ohio.....	Mar. 13, 1855.
13088	Stump-machine.....	Stephen Gorton and Francis Morris.....	Crawford county, Pa.....	June 19, 1855.
13059	Tile-machines.....	Gottlieb Graessle.....	Rossville, Ohio.....	June 12, 1855.
12596	Vault cover, illuminating.....	Thaddeus Hyatt.....	New York, N. Y.....	Mar. 27, 1855.
13352	Vault covers.....	James Harrison, jr.....	Milwaukee, Wis.....	July 31, 1855.
13513	Vault lights.....	W. P. Walter and J. Green, assignors to W. P. Walter.....	Philadelphia, Pa.....	Aug. 28, 1855.
12676	Walls, concrete, framing for building.....	Salathiel Ellis.....	New York, N. Y.....	April 10, 1855.
13000	Washboards to walls, mode of securing.....	Thomas Estlack.....	Philadelphia, Pa.....	June 5, 1855.
13114	Wells, artesian, drills for. (See Boring.) Wells, artesian, joints of pipes for.....	Jesse Norris Bolles, assignor to H. J. Ockershausen.....	Philadelphia, Pa.....	June 19, 1855.
	Window-blinds, iron. (See Blinds.) Window-shades. (See Blinds.) Window-shutters. (See Blinds.)			

*CLASS X.—LAND CONVEYANCE, comprising carriages, cars, and other vehicles used on roads, and parts thereof.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12238	Axles, mode of attaching hubs to. (See Hubs.) Axles, plugs for lubricating.....	Alfred C. Garratt.....	Hanover, Mass.....	Jan. 16, 1855.

12347	Axle-box rollers .....	{	George W. Gelsendorff and Jacob C. Gelsendorff .....	Marion county, Ind..... }	Feb. 6, 1855.
13227	Axles, washers for .....	{	Alfred E. Smith.....	Cincinnati, Ohio..... }	July 24, 1855.
12166	Brakes, car, steam, railroad.....		Henry Miller.....	Bronxville, N. Y.....	Jan. 2, 1855.
12245	Brake-blocks for railroad cars.....		Lucius Paige.....	New York, N. Y.....	Jan. 16, 1855.
12263	Brakes, steam, mode of connecting pipes for.....		Wendell Wright .....	Cavendish, Vt.....	Jan. 16, 1855.
12539	Brake, wagon.....		J. E. Blodgett.....	New York, N. Y.....	Mar. 20, 1855.
12552	Brakes, railroad-car .....		Gideon Hotchkiss.....	Hannibal, N. Y.....	Mar. 20, 1855.
12685	Brakes, car, graduating the tension of.....		William Loughridge.....	Wenton, N. Y.....	Mar. 20, 1855.
13038	Brakes, self-acting car, arrangement of bumpers for.....		James J. McComb .....	New Orleans, La.....	June 12, 1855.
13108	Brake, self-acting, for vehicles.....		Peter Ten Eyck .....	New York, N. Y.....	June 19, 1855.
13139	Brake, railroad-car.....		Elisha E. Rice.....	Hallowell, Me.....	June 26, 1855.
13440	Brake, railroad-car.....		Gustavus A. Somerby and Chas. W. Fogg.....	Waltham, Mass.....	Aug. 14, 1855.
13278	Brake, steam, double-acting .....		Robert L. Curry.....	Philadelphia, Pa.....	Dec. 25, 1855.
12490	Car, railroad coupling.....		Edward Rice.....	Canandaigua, N. Y.....	Mar. 6, 1855.
12680	Car, railroad coupling.....		James H. Jones .....	Scio, N. Y.....	April 10, 1855.
13264	Car, railroad, coupling.....		Aaron G. Heckrotte.....	New York, N. Y.....	July 17, 1855.
13274	Car, railroad, coupling.....		John Ryan .....	Wilmington, Del.....	July 17, 1855.
13869	Car, railroad, coupling.....		Joseph T. England.....	Baltimore, Md.....	Dec. 4, 1855.
12644	Car, railroad, seats.....		Alpheus D. Smith.....	Mereditth, N. Y.....	April 3, 1855.
13079	Car, railroad, seats.....		John H. Cocke.....	Bremo, Va.....	June 19, 1855.
13464	Car, railroad, seats.....		Ebenezer Jeffers.....	Dorchester, Mass.....	Aug. 21, 1855.
13471	Car, railroad, seats.....		Albert M. Smith.....	Rochester, N. Y.....	Aug. 21, 1855.
12371	Car, ventilator. (See Class V.) Car, mechanism for retaining, upon the track.....		George P. Ketcham .....	Bedford, Ind.....	Feb. 6, 1855.
12400	Cars, railroad, head-supporters for .....		J. N. Williams.....	Dubuque, Iowa.....	Feb. 13, 1855.
12684	Cars, railroad, spiral wheel for replacing upon the track.....		Robert F. R. Lewis.....	Annapolis, Md.....	April 10, 1855.
12772	Cars, railroad, ticket-register for .....		William Apperley.....	Louisville, Ky.....	May 1, 1855.
13080	Cars, railroad, ventilating. (See Class V.) Cars, railroad, apparatus for replacing, upon the track.....		S. Park Coon .....	Milwaukee, Wis.....	June 19, 1855.
13264	Cars, railway, excluding dust from .....		Elam C. Salisbury.....	New York, N. Y.....	July 31, 1855.
13417	Cars, apparatus for replacing.....		Fortune L. Bailey.....	Freeport, Ind.....	Aug. 14, 1855.
13528	Cars, earth, mode of operating and dumping.....		Richard Ray.....	Louisport, Ky.....	Sept. 4, 1855.

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13529	Cars, freight, locks for. (See Class II.)	Richard Ray.....	Louisport, Ky.....	Sept. 4, 1855.
13676	Cars, dumping, operating.....	James M. Cook.....	Taunton, Mass.....	Oct. 16, 1855.
13705	Cars, railroad, dust-deflector for windows of.	Charles Mahon.....	Washington, D. C.....	Oct. 23, 1855.
13779	Cars, railroad, safety attachment in front of.	V. P. Corbett.....	New York, N. Y.....	Nov. 13, 1855.
13779	Cars, railroad, devices for partially excluding dust from.			
	Cars, railroad, method of self-ventilation for. (See Class V.)			
12154	Carriages, journal boxes for.....	S. B. Batchelor.....	Lowville, N. Y.....	Jan. 2, 1855.
12218	Carriage cramp.....	Samuel T. Sanford.....	Fall River, Mass.....	Jan. 9, 1855.
12272	Carriages.....	George R. Comstock.....	Manheim, N. Y.....	Jan. 23, 1855.
12273	Carriage-seats.....	George R. Comstock.....	Manheim, N. Y.....	Jan. 23, 1855.
12320	Carriage-wheels.....	John Skelly.....	Brooklyn, N. Y.....	Jan. 30, 1855.
12430	Carriage-windows.....	John T. Ogden, assignor to J. T. Ogden and Thos. Goddard.	Boston, Mass.....	Feb. 20, 1855.
12751	Carriages, folding tops for.....	William G. Fogleson, assignor to Fogleson & Anderson.	Xenia, Ohio.....	April 17, 1855.
12869	Carriages, joint-bodied.....	A. H. Niles.....	Georgetown, N. Y.....	Mar. 15, 1855.
12979	Carriages, vehicles.....	E. D. Williams.....	Wilmington, Del.....	May 29, 1855.
13171	Carriage-tops, apparatus for setting bows of.	E. & M. Hayes.....	Wheeling, Va.....	July 3, 1855.
13311	Carriages.....	Moses G. Hubbard.....	New York, N. Y.....	July 24, 1855.
13428	Carriages, extension vehicle.....	Benjamin W. Gay.....	New London, N. H.....	Aug. 14, 1855.
13487	Carriages.....	John L. Cicco.....	Xenia, Ohio.....	Aug. 28, 1855.
13604	Carriages, hold-back for.....	Alonzo Webster.....	Montpelier, Vt.....	Sept. 25, 1855.
13690	Carriages, extension-reach for.....	Edwin Wilson.....	Prattsburg, N. Y.....	Oct. 16, 1855.
13797	Carriage-bodies, mode of hanging.....	Ansel W. Dorter.....	Little Falls, N. Y.....	Nov. 13, 1855.
13821	Carriages, mode of attaching tops to seats of.	Lyman Jacobs and E. C. Landon.....	Castile, N. Y.....	Nov. 20, 1855.
13604	Carts, self-loading.....	Ze. Butt.....	Lincolnton, N. C.....	Mar. 13, 1855.

12563	Carts, self-loading.....	John A. Sprague and Bernard O'Connor.....	Dayton, Ohio.....	Mar. 20, 1855.
12604	Carts, self-loading and unloading.....	Jonathan Wilkison.....	Hopewell Cotton Works, Pa.....	May 1, 1855.
12455	Hubs, &c., mandrel for holding carriage.....	Niran Hawley.....	Rome, N. Y.....	Feb. 27, 1855.
12671	Hubs, mode of attaching axles to.....	John M. Perkins.....	New York, N. Y.....	May 15, 1855.
12946	Hub and axle, fastening.....	John Henderson.....	Horseheads, N. Y.....	May 22, 1855.
13307	Hubs, machine for boring and mortising.....	Chauncey H. Guard, assignor to J. A. Scroggs and C. H. Guard.....	Brownsville, N. Y.....	July 24, 1855.
13919	Hubs, carriage.....	Shepherd W. Reed.....	Berkshire, N. Y.....	Dec. 11, 1855.
13962	Hubs, attaching to axles.....	E. S. Scripture.....	Green Point, N. Y.....	Dec. 18, 1855.
12788	Journal-boxes, alloys for.....	Thomas Firth.....	Cincinnati, Ohio.....	May 1, 1855.
13427	Journal-boxes, alloys for.....	Joseph Garratt, sr.....	Indianapolis, Ind.....	Aug. 14, 1855.
13465	Journal-box alloy.....	Benjamin F. Lawton.....	Troy, N. Y.....	Aug. 21, 1855.
13466	Journal-box alloys.....	Benjamin F. Lawton, M. D.....	Troy, N. Y.....	Aug. 21, 1855.
12591	Journal-boxes, packing.....	Warner Groat.....	Troy, N. Y.....	Mar. 27, 1855.
13454	Journal, glass, box.....	Edw. Campbell.....	Columbus, Ohio.....	Aug. 21, 1855.
13778	Shafts to axles, attaching.....	Thos. Chope.....	Detroit, Mich.....	Nov. 13, 1855.
13804	Shafts to axles, mode of securing.....	Alfred E. Smith.....	Bronxville, N. Y.....	Nov. 13, 1855.
12513	Sleighs.....	William H. Guilets.....	Rodgersville, N. Y.....	Mar. 13, 1855.
12850	Sleighs.....	D. S. Barber and A. & D. Thompson.....	Pittsfield, Vt.....	May 15, 1855.
12406	Springs, India rubber. (See Class IV.).....	Levi Bissell.....	New York, N. Y.....	Feb. 20, 1855; antedated Aug. 20, 1854.
12475	Springs on wagons, arrangement of the ..	Harmon W. Ballard.....	Burlington, Vt.....	Mar. 6, 1855.
12764	Springs, carriage.....	Thomas Murgatroyd, jr.....	Smithville, Canada West.....	April 24, 1855; Canadian patent dated July 21, 1854.
12849	Springs, circular, metallic plate.....	John W. Adams.....	New York, N. Y.....	May 15, 1855.
12880	Springs, carriage.....	M. G. Hubbard.....	New York, N. Y.....	May 15, 1855.
12910	Springs for carriages.....	M. G. Hubbard.....	New York, N. Y.....	May 22, 1855.
13248	Springs, pneumatic.....	James F. Heyward, assignor to the Delaware Air-spring Manufacturing Company.....	Wilmington, Del.....	July 10, 1855; English patent dated Jan. 26, 1855.
13553	Springs, railroad car, conical plate.....	J. J. Speed, jr., and J. A. Bailey.....	Detroit, Mich.....	Sept. 11, 1855.
13946	Springs, railroad car.....	P. G. Gardiner.....	New York, N. Y.....	Dec. 12, 1855.
13775	Tire, &c., upsetting.....	Hiram Abbott.....	Wakeman, Ohio.....	Nov. 13, 1855.
13405	Tongue iron, self-adjusting.....	Wm. J. Temple.....	Princeton, Mass.....	Aug. 7, 1855.
12252	Truck, hand.....	Parley Hutchins.....	Norwich, Mass.....	Jan. 16, 1855.
12358	Trucks, locomotive.....	John Cochran.....	Baltimore, Md.....	Feb. 6, 1855.
	Vehicle, extension. (See Carriages.)			
	Vehicles. (See Carriages.)			

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13323	Wagons.....	J. Thornton Russell.....	Wheeling, Va.....	July 24, 1855.
13303	Wagons.....	James Parsons.....	Dublin, Ind.....	Aug. 29, 1855.
13372	Wagons, military.....	Joseph Francis.....	New York, N. Y.....	Dec. 4, 1855.
12317	Wheels, carriage.....	W. Race and B. Holly.....	Seneca Falls, N. Y.....	Jan. 30, 1855.
12572	Wheels, axles, and friction rollers, arrangement of.....	George A. Prentiss.....	Chehire county, N. H.....	Mar. 20, 1855.
12397	Wheels, carriage.....	D. W. Clark and S. H. Gray.....	Bridgeport, Conn.....	May 22, 1855.
	Wheels, heating wrought iron, for forging. (See Class II.)			
13012	Wheels, wagon.....	Sylvanus Perkins.....	Pittsburg, Pa.....	June 5, 1855.
13585	Wheels, car, cooling cast-iron.....	John M. Sigourney.....	Watertown, N. Y.....	Sept. 18, 1855.
	Wheels, car, machines for forging. (See Class II.)			
12911	Whiffletrees.....	Isaac Krebs.....	Winchester, Va.....	May 22, 1855.
12976	Whiffletrees.....	Harvey and Alonzo Webster.....	Montpelier, Vt.....	May 29, 1855.
13418	Whiffletrees.....	O. C. and O. J. Barnes.....	Pittsfield, Vt.....	Aug. 14, 1855.
13712	Whiffletrees.....	George H. Yard.....	Trenton, N. J.....	Oct. 23, 1855.
13744	Whiffletrees.....	George C. Barney.....	Brookline, Mass.....	Nov. 6, 1855.
13297	Whiffletree.....	Archibald Bailey and Daniel L. Allard.....	Blue Rock, Ohio.....	July 24, 1855.

## CLASS XI.—HYDRAULICS AND PNEUMATICS, including water-wheels, windmills, and other implements operated on by air or water, or employed in the raising and delivery of fluids.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12165	Blasts, &c., machine for blowing.....	P. W. Mackenzie.....	Jersey City, N. J.....	Jan. 2, 1855.
12743	Blast-furnaces, method of treating air for.....	Thomas W. Bakewell.....	Cincinnati, Ohio.....	Nov. 6, 1855.
12195	Cock, stop.....	David N. B. Coffin, Jr.....	Lynn, Mass.....	Jan. 9, 1855.

12912	extinguishing fire. Engines, steam fire, carriage for .....	A. B. Latta .....	Cincinnati, Ohio .....	May 22, 1855.
12817	Engines, air. (See Class VI.) Engines, air and steam. (See Class VI.) Faucet.....	William Fowler..... Exra Ripley..... Joseph Holley..... Edward A. Serry..... Charles Cleveland..... Albert Fuller..... Job Brown..... Louis Finger, assignor to L. Finger and L. Schell.....	New York, N. Y. .... Troy, N. Y. .... Brooklyn, N. Y. .... Norwich, Conn. .... Ashfield, Mass. .... Boston, Mass. .... Lawn Ridge, Ill. .... Borton, Mass. ....	May 8, 1855. May 8, 1855. May 29, 1855. June 12, 1855. June 12, 1855. Aug. 14, 1855. Oct. 16, 1855. Nov. 13, 1855. Nov. 20, 1855.
12830	Faucet, balance-gate .....	Thomas C. Clarke.....	Camden, N. J. ....	June 12, 1855.
12850	Faucet, fluid.....	Thomas C. Clarke.....	Camden, N. J. ....	June 12, 1855.
13047	Faucet.....	Nathaniel Waterman .....	Boston, Mass. ....	June 12, 1855.
13424	Faucet, ventilating .....	Orson C. Phelps, assignor to O. C. Phelps and John Holton.....	Boston, Mass. ....	June 12, 1855.
13577	Faucet.....	Gustavus Weisenborn, assignor to Epes W. Sargent.....	New York, N. Y. ....	Oct. 2, 1855; English patent dated Nov. 17, 1854.
13776	Faucets, weighing attachment for .....	George N. Todd.....	Dundaff, Pa. ....	Feb. 20, 1855.
13836	Faucet, filtering .....	E. N. Moore and J. H. Hanyan.....	Lenox, Pa. ....	July 24, 1855.
13026	Filter.....	Smith Groom.....	Troy, N. Y. ....	April 3, 1855.
13027	Filter, hydrant.....	Albert W. Roberts.....	Hartford, Conn. ....	May 8, 1855.
13054	Filter, portable floating .....	L. E. Hicks, assignor to himself and Geo. N. Davis.....	Boston, Mass. ....	May 22, 1855.
13070	Filtering, metallic medium for .....	Albert M. Waterhouse.....	New York, N. Y. ....	June 19, 1855.
13298	Filter, thermo-udoric.....	Thomas Hanson.....	New York, N. Y. ....	Mar. 20, 1855.
12421	Gate, self-regulating water.....	T. E. Sandgren.....	Wilmington, Del. ....	July 24, 1855.
13219	Gate, water, balance.....	W. H. Elliot.....	Plattsburgh, N. Y. ....	July 24, 1855.
12635	Governors, combination of speed and resistance. (See Class IX.) Hose-coupling .....	John S. Barden.....	New Haven, Conn. ....	Jan. 16, 1855.
12831	Hose-pipes, nozzle for .....			
12937	Hose-couplings.....			
13112	Hose-couplings .....			
12549	Hydraulic oil-presses. (See Class XII.) Hydraulic ram, valve for .....			
13324	Hydro-dynamic friction joints.....			
13313	Hydro-pneumatic machine for exhausting and sealing vessels. Metre, water .....			



## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date.
12887	Metre, fluid .....	John Taggart, assignor to J. Taggart and J. S. Shaler.	Roxbury, Mass .....	May 15, 1855.
12934	Metre, water .....	John S. Barden, assignor to O. Snow and G. B. Farnum.	New Haven, Conn. ....	May 22, 1855.
13193	Metre, water .....	J. Curtis and S. Hoard .....	Chicago, Ill. ....	July 3, 1855.
13320	Metre, water .....	Henry R. Worthington .....	Brooklyn, N. Y. ....	July 24, 1855.
13792	Metre, water .....	S. Krauser and C. Ritter .....	Reading, Pa. ....	Nov. 13, 1855.
	Pneumatic springs. (See Class X.)			
12199	Pump, forcing .....	Gilbert B. Farnam .....	New York, N. Y. ....	Jan. 9, 1855.
12296	Pumps, chain, buckets for .....	Edmund Morris .....	Burlington, N. J. ....	Jan. 23, 1855.
12312	Pumps, force, double-acting .....	George Fowler .....	Northford, Conn. ....	Jan. 30, 1855.
12326	Pump, force .....	Henry Rogers .....	Ferrisburgh, Vt. ....	Jan. 30, 1855.
12342	Pump, force, double-acting .....	W. C. and J. S. Burnham .....	New York, N. Y. ....	Feb. 6, 1855.
12350	Pumps, elliptical rotary .....	Birdsill Holly .....	Seneca Falls, N. Y. ....	Feb. 6, 1855.
12413	Pump-valves .....	Gustavus Hammer .....	Cincinnati, Ohio. ....	Feb. 20, 1855.
12517	Pumps, operating, by wind .....	Hiram Moore .....	Charleston, Ill. ....	Mar. 13, 1855.
12542	Pumps, device for air-chamber of .....	John P. Cowin .....	Seneca Falls, N. Y. ....	Mar. 20, 1855.
12544	Pump .....	Chas. G. Curtis .....	Cincinnati, Ohio. ....	Mar. 20, 1855.
12559	Pump, force, double-acting .....	Thos. J. De Yampert .....	Springfield, Mass. ....	Mar. 20, 1855.
12566	Pumps .....	William T. Vose .....	Mobile, Ala. ....	Sept. 11, 1855.
12579	Pump, rotary .....	Abel Barker .....	Newtonville, Mass. ....	Mar. 20, 1855.
12601	Pump, self-adjustable or anchoring .....	Thomas Ling .....	Honesdale, Pa. ....	Mar. 27, 1855.
12617	Pumps, air, method of lubricating pistons of .....	Abel Barker .....	Honesdale, Pa. ....	Mar. 27, 1855.
12625	Pumps, steam, direct-acting hydraulic .....	Robert B. Goreuch .....	Honesdale, Pa. ....	April 3, 1855.
12631	Pump, double-acting .....	Benjamin F. Joslyn .....	New York, N. Y. ....	April 3, 1855.
12645	Pumps, chain .....	Arcadius Wyckoff .....	Worcester, Mass. ....	April 3, 1855.
12753	Pump, elastic tube .....	Porter & Bradley, assignors to Dennison & Bradley.	Columbus, Ohio. ....	April 3, 1855.
			Brattleboro, Vt. ....	April 17, 1855.
13007	Pump, double-acting .....	Edwin A. Jeffery .....	Corning, N. Y. ....	June 5, 1855.
13179	Pumps, rotary .....	Thos. Crane .....	Fort Atkinson, Wis. ....	Dec. 25, 1855.
13214	Pump-barrel, device to allow escape of waste-water from .....	James E. Cronk .....	Poughkeepsie, N. Y. ....	June 10, 1855.

13219	Pumps, ship.....	John J. Heard.....	Boston, Mass.....	July 10, 1855.
13233	Pumps, & c., self-regulating, water-packing for.	Joseph Smart.....	Philadelphia, Pa.....	July 10, 1855.
13254	Pumps, valves of, method of operating...	Jacob Edson.....	Boston, Mass.....	July 17, 1855.
13273	Pump-rotary, wrecking.....	Oliver Palmer.....	Buffalo, N. Y.....	July 17, 1855.
13289	Pumps, & c., double-reciprocating split piston-rod for.	John A. Burnap.....	Albany, N. Y.....	July 24, 1855.
13370	Pumps, steam, direct-acting hydraulic.....	Henry R. Worthington.....	Brooklyn, N. Y.....	July 31, 1855.
13459	Pumps.....	S. H. Gray.....	Bridgeport, Conn.....	Aug. 21, 1855.
13522	Pumps, ship's.....	Samuel Pearn.....	New York, N. Y.....	Oct. 2, 1855.
13643	Pumps, vibrating.....	Elwood Garrette.....	Wilmington, Del.....	Oct. 9, 1855.
13816	Pumps, double-acting.....	D. W. Clark.....	Bridgeport, Conn.....	Nov. 20, 1855.
13831	Pumps.....	H. Lindeay.....	Ashville, N. C.....	Dec. 4, 1855.
13930	Pumps, rotary.....	C. D. Wright.....	Fort Atkinson, Wis.....	Dec. 11, 1855.
13967	Pumps, suckers for.....	Joseph Wells.....	Bordentown, N. J.....	Dec. 18, 1855.
	Pumping water out of vessels, method of (See Class VII.)			
13590	Reservoirs, & c., apparatus for discharging; Screw-fastenings. (See Class II.)	Daniel Bedford.....	New York, N. Y.....	Sept. 25, 1855.
13126	Tidal alarm-apparatus.....	M. R. Fletcher.....	Concord, N. H.....	June 26, 1855.
	Valve, balance. (See Class VI.)			
	Valves, oscillating, and gearing for pump- ing engines. (See Class VI.)			
13446	Water-elevator.....	Caleb Winegar.....	Union Springs, N. Y.....	Aug. 14, 1855.
	Water-gate, self-regulating. (See Gates.)			
	Water-metre. (See Metres.)			
13246	Water-wheels, current.....	Richard Deering, Jr.....	Louisville, Ky.....	Feb. 6, 1855.
12420	Water-wheel.....	Thomas Tripp.....	Sandy Creek, N. Y.....	Feb. 20, 1855.
12669	Water-wheel, centrifugal.....	Oscar Willis.....	Dizardville, N. C.....	Mar. 20, 1855.
12606	Wheel, current.....	William S. Smith.....	Cedar Rapids, Iowa.....	Mar. 27, 1855.
12779	Wheel, eccentric, mode of applying, to water-power.	James B. Huert.....	Black and White, Va.....	May 1, 1855.
12927	Water-wheels, curbs for.....	John Tyler.....	West Lebanon, N. H.....	May 22, 1855.
12949	Water-wheel.....	D. S. Howard.....	Lyonsdale, N. Y.....	May 29, 1855.
13172	Wheels, turbine, method of regulating the issue-apertures and of suspending.	Birdall Holly.....	Seneca Falls, N. Y.....	July 3, 1855.
12980	Water-wheel.....	W. M. Wheeler.....	Upton, Mass.....	July 17, 1855.
12987	Water-wheel, turbine.....	Henry Van DeWater.....	Troy, N. Y.....	July 17, 1855.
13986	Water-wheel, bucket for.....	C. C. Taylor.....	Delafield, Wis.....	July 31, 1855.

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13458	Water-wheel, pressure.....	William Fields and Solomon Gerhard.....	Wilmington, Del.....	Aug. 21, 1855.
13685	Water-wheel .....	Hiram Morris, Elijah K. Gorton, and Edward Saeger.....	Crawford county, Pa.....	Oct. 16, 1855.
13793	Wheel, tide, self-feathering adjusting .....	Richard L. Nelson.....	Ocala, Florida.....	Nov. 13, 1855.
13896	Water-wheels.....	John H. Gates, assignor to.....	Franklindale, Pa.....	Dec. 4, 1855.
		Abraham Edwards.....	Towanda, Pa.....	
13918	Water-wheel, impact .....	Atchinson Queal .....	Plymouth, N. Y.....	Dec. 11, 1855.
	Wind-mill, mode of checking. (See Class XIII.)			
	Wind-mill, regulating. (See Class XIII.)			
12208	Wind-mill, self-regulating .....	Frank G. Johnson.....	Brooklyn, N. Y.....	Jan. 9, 1855.
13903	Wind-mill .....	Charles R. Webb .....	Philadelphia, Pa.....	June 12, 1855.
13156	Wind-mill, self-regulating .....	Addison P. Brown.....	Brattleboro', Vt.....	July 3, 1855.
13244	Wind-mill, self-regulating .....	John Elgar.....	Baltimore, Md.....	July 10, 1855.
13247	Wind-mill, self-regulating .....	Benj. Frantz, assignor to John Phillips.....	Waynesboro', Pa.....	July 10, 1855.
13268	Wind-mill .....	J. S. Morgan.....	Highland, Ill.....	July 17, 1855.
13288	Wind-mill, self-regulating .....	J. Dickinson and O. White.....	Richmond, Ind.....	July 17, 1855.
13969	Wind-wheels, arrangements and combinations of machinery for regulating velocity of.....	Jeremiah Burnite, assignor to Burnite & Clark.....	Paseyville, Pa.....	Dec. 18, 1855.

CLASS XII.—LEVER, SCREW, AND OTHER MECHANICAL POWER, *as applied to pressing, weighing, raising, and moving weights.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
	Balance for detecting spurious coin. (See Scales.)			
	Balances, platform. (See Scales) .....			

13732	Balances, spring. (See Scales.)	Lewis Smith.....	Buffalo, N. Y.....	April 17, 1855
13733	Bearings, compensation.....	Jonathan Whipple, Jr.....	Milford, Mass.....	May 23, 1855.
13928	Block, nipper, self-acting.....	B. J. Burnett.....	New York, N. Y.....	Dec. 25, 1855.
13976	Blocks, hoisting. (See Class VII.)	Isaac J. Cole.....	Piermont, N. Y.....	Jan. 23, 1855.
12988	Cranes.....	Edw. Mingay.....	Boston, Mass.....	July 17, 1855.
13989	Crowbar, compound.....	G. W. Bigelow.....	New Haven, Conn.....	Nov. 20, 1855.
13813	Derricks.....	Samuel G. Jones.....	Fitzwatertown, Pa.....	Jan. 23, 1855.
13814	Drippers, oil. (See Lubricators.)	Nelson B. Carpenter and John Powers.....	New York, N. Y.....	Feb. 6, 1855.
12980	Gear-wheels, cutting teeth of.....	Thomas C. Ball.....	Walpole, N. H.....	Feb. 27, 1855.
12345	Jack, lifting, for moving rail-cars.....	John Fouser.....	Philadelphia, Pa.....	Nov. 13, 1855.
12464	Jacks, screw.....	Francis Drew, assignor to Drew & S. S. Gray.....	South Boston, Mass.....	Nov. 20, 1855.
13783	Jacks, supporting.....	John Sutton.....	New York, N. Y.....	Jan. 16, 1855.
13835	Jacks, lifting.....	John Sutton.....	New York, N. Y.....	Jan. 23, 1855.
12959	Lubricating compounds. (See Class IV.)	Robert M. Wade.....	Wadestown, Va.....	May 1, 1855.
12990	Lubricator for steam-engines.....	George Dixon.....	Lafayette, Ind.....	May 15, 1855.
12903	Lubricator.....	James M. Thompson.....	Holyoke, Mass.....	Aug. 7, 1855.
12859	Lubricator, velocitrot.....	Michael Egan.....	Ogdensburg, N. Y.....	Nov. 6, 1855.
13406	Lubricator (oil-dripper).....	John Sutton.....	New York, N. Y.....	Nov. 6, 1855.
13749	Lubricators, automatic, for railroad-car axles.....	Charles A. Postley.....	Philadelphia, Pa.....	Aug. 7, 1855.
13769	Lubricators self-feeding, atmospheric.....	James P. Arnold.....	Louisville, Ky.....	April 3, 1855.
13397	Measuring and weighing grain, machine for.....	Pella Manny.....	Wadams Grove, Ill.....	April 17, 1855.
12615	Presses.....	Jonathan Grout.....	Hooking City, Ohio.....	June 12, 1855.
12740	Press, hay.....	George King.....	Farmville, Va.....	June 12, 1855.
13060	Press, self-acting cotton.....	Augustus M. Glover.....	Waterborough, S. C.....	July 3, 1855.
13961	Pressing tobacco in plugs.....	George R. Comstock.....	Manheim, N. Y.....	July 24, 1855.
13191	Presses, cotton.....	H. H. Fultz.....	Lexington, Miss.....	Aug. 14, 1855.
13337	Presses, cheese.....	R. Kinsley.....	Lynchburg, Va.....	Nov. 13, 1855.
13426	Presses, cotton.....	W. F. and C. J. Provost.....	Selma, Ala.....	Nov. 20, 1855.
13790	Presses, tobacco.....	William Wilber.....	New Orleans, La.....	Dec. 28, 1855.
13826	Presses, cotton.....	William H. Brown.....	Erie, Pa.....	Jan. 2, 1855.
14005	Presses, hydraulic oil.....			English patent dated Oct. 2, 1854.
12155	Purchases, suspended.....			
12156	Raising and transporting stones, machines for. (See Class XV.)			

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12246	Scales .....	John L. McPherson .....	New Vienna, Ohio .....	Jan. 16, 1855.
12249	Scales .....	Eliha P. Beckwith .....	New London, Conn. ....	Jan. 16, 1855.
12698	Scales .....	David M. Smyth .....	New York, N. Y. ....	April 10, 1855.
13232	Scales, counter .....	Frederick Scheurer .....	New York, N. Y. ....	July 10, 1855.
13331	Scales, union, platform .....	Augustus Sanborn, assignor to C. and T. Fairbanks & Co. ....	Johnsbury, Vt. ....	July 24, 1855.
13497	Scales, weighing .....	John L. McPherson .....	New Vienna, Ohio .....	Aug. 28, 1855.
13540	Scales .....	John Allender .....	New London, Conn. ....	Nov. 27, 1855.
12802	Shafts and pulleys, arranging at an angle .....	Abner Whiteley .....	Springfield, Ohio .....	May 1, 1855.
12147	Slides and ways, protecting, from dust .....	Edw. H. Foote .....	New York, N. Y. ....	Jan. 2, 1855.
13075	Valve, cone, two-motion .....	Horatio Allen .....	New York, N. Y. ....	June 19, 1855.
12214	Windlasses .....	Oldin Nichols .....	Lowell, Mass. ....	Jan. 9, 1855.
13429	Wool, fleeces of, machine for bundling .....	W. N. Ganser .....	Fair Haven, Conn. ....	Aug. 14, 1855.
12778	Wool, fleeces of, machine for bundling .....	John How .....	Deer Creek, Mich. ....	May 1, 1855.

**CLASS XIII.—GRINDING-MILLS AND MILL-GEARING, including grain-mills, mechanical movements, horse-powers, &c.**

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13843	Belt couplings .....	Thomas H. Corbett .....	Brooklyn, N. Y. ....	Nov. 27, 1855.
12349	Bolts, flour, wire-cloth .....	F. B. Hunt and E. Nordyke .....	Richmond, Ind. ....	Feb. 6, 1855.
12422	Bolts, flour, feeding .....	Samuel Taggart .....	Indianapolis, Ind. ....	Feb. 20, 1855.
13541	Connecting rods, &c., method of securing keys in, .....	George H. Coney .....	Boston, Mass. ....	Sept. 11, 1855.
	Corn and cob-crusher. (See Mills) .....			
	Corn grinder and crusher. (See Mills) .....			
	Crushing and pulverizing ores, machine for. (See Class II.) .....			

Crushing, quarts, machines. (See Class II.)				
Flour bolt, wire-cloth. (See Bolts)				
13192	Flour, cooling and drying.....	George B. Willison.....	Elizabeth, Pa.....	July 3, 1855.
12378	Grain cleaners and threshers .....	George Daniels .....	Philadelphia, Pa.....	Feb. 13, 1855.
12512	Grain cleaner.....	George Leach .....	Owego, N. Y.....	Mar. 13, 1855.
12657	Grain cleaner.....	B. T. Trimmer.....	Parma, N. Y.....	April 3, 1855.
13103	Grain cleaners.....	Harrison D. Reynolds.....	Pendleton, Ind.....	June 19, 1855.
13927	Grain-cleaning machines .....	J. L. Boothe .....	Cuyaboga Falls, Ohio.....	Dec. 18, 1855.
Grinding cotton and other seeds for their oils. (See Mills.)				
12556	Governors, combination of speed and re- distance.	William H. Elliot.....	Plattsburgh, N. Y.....	Mar. 27, 1855.
13415	Governors for steam-engines, &c.....	John and Evan Arthur.....	New Brunswick, N. J.....	Aug. 14, 1855.
13549	Hominy-machine.....	Jon'n Neebitt, jr., and Thos. J. Cooley ..	Clear Spring, Md.....	Sept. 11, 1855.
12731	Horse-powers .....	John Simpson .....	Atlanta, Ga.....	April 17, 1855.
12782	Horse-powers .....	Clement Russell .....	Massillon, Ohio.....	May 1, 1855.
13167	Horse-power .....	H. H. Fultz .....	Lexington, Miss.....	July 3, 1855.
13955	Horse-powers .....	Saml. Pelton .....	New Windsor, Md.....	Dec. 18, 1855.
13029	Mill-bushes .....	Geo. L. Dulaney .....	Mount Jackson, Va.....	June 12, 1855.
12431	Mill, paint .....	Chas. W. Brown, assignor to Geo. W. Banker and Geo. O. Carpenter.	Boston, Mass.....	Feb. 20, 1855.
12707	Mill, paint .....	David E. Paynter, assignor to Israel M. Bissell.	Philadelphia, Pa.....	April 10, 1855.
13161	Mill-step .....	Julius C. Dickey.....	Saratoga Springs, N. Y.....	July 3, 1855.
13954	Mill spindle steps .....	Isaac N. Parker .....	Lewiston, Maine.....	Dec. 18, 1855.
12408	Mill-stone dress for hulling rice .....	Chas. R. Barnes .....	Owego, N. Y.....	Feb. 20, 1855.
13115	Mill-dress .....	George L. Dulaney, assignor to Reuben Allen.	Mount Jackson, Va.....	June 19, 1855.
13384	Mill-stones, method of hanging.....	Robert Cochran.....	Cincinnati, Ohio.....	Aug. 7, 1855.
13956	Mill-stones, mode of dressing, for scour- ing and hulling buckwheat, &c.	Bishop J. Harris.....	Auburn, Pa.....	Dec. 25, 1855.
12822	Mill, wind, mode of checking .....	A. Lempeke.....	Pleasant Mount, Pa.....	May 8, 1855.
12348	Mills, (corn and cob-crusher) .....	John S. Griffith .....	Huntingdon, Pa.....	Feb. 6, 1855.
12346	Mill, crushing and grinding .....	Joel Weigle .....	Swan Station, Pa.....	Feb. 6, 1855.
12977	Mills, (corn-grinder and crusher) .....	William D. Wilson .....	Richmond, Ind.....	May 29, 1855.
13476	Mills, corn and cob .....	Daniel S. James, assignor to himself, J. B. White, and J. W. McIntyre.	New Market, Va.....	Aug. 21, 1855.
13609	Mills, corn and cob .....	E. D. Grainger.....	Philadelphia, Pa.....	Sept. 18, 1855.

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13730	Mills, corn and cob.....	George Parten.....	Washington, D. C.....	Oct. 30, 1855.
14002	Mills, corn and cob.....	Thos. B. Stout.....	Keyport, N. J.....	Dec. 26, 1855.
12278	Mill for cutting and grinding vegetables..	William H. Harn.....	Carlisle, Pa.....	Jan. 23, 1855.
12487	Mill for grinding and bolting sumac.....	Saml. W. Powell.....	Tuscarora Valley, Pa.....	Mar. 6, 1855.
12953	Mills, cider.....	Tobias J. Kindeberger.....	Springfield, Ohio.....	May 29, 1855.
13448	Mills for compressing and grinding { grapes and other small fruit. }	Z. Coleman Robbins, assignor to A. Martin.....	Washington, D. C.....	Aug. 14, 1855.
13558	Mills, (grinding cotton and other seeds for their oil.)	William Wilber.....	Norwich, Conn.....	Sept. 11, 1855.
13741	Mills, cider or wine.....	Samuel Krauser.....	Reading, Pa.....	Oct. 23, 1855.
13837	Mills for grinding coffee, &c.....	C. W. Van Vliet, assignor to Charles Parker.....	Fishkill Landing, N. Y.....	Nov. 20, 1855.
13839	Mills for grinding apples.....	W. O. Hickok.....	Harrisburg, Pa.....	Nov. 20, 1855.
12181	Mills, grinding.....	Amory Felton.....	Troy, N. Y.....	Jan. 2, 1855.
12223	Mills, flouring.....	John L. Yule.....	New Orleans, La.....	Jan. 9, 1855.
12461	Mills, portable grain.....	Charles Leavitt.....	Quincy, Ill.....	Feb. 27, 1855.
12959	Mills, grain, shoe for.....	Henry Mellich.....	Walpole, N. H.....	May 29, 1855.
13610	Mills, flouring.....	D. S. Wagener.....	Pen Yan, N. Y.....	Sept. 25, 1855.
13946	Mills for grinding grain, &c.....	Ezra Ripley.....	Troy, N. Y.....	Dec. 25, 1855.
12870	Mills, wind, regulating.....	Francis Peabody.....	Salem, Mass.....	May 15, 1855.
13339	Shafts, wrought-iron.....	James Montgomery.....	Baltimore, Md.....	July 24, 1855.
12839	Snout-machines.....	Grant B. Turner.....	Cuyahoga Falls, Ohio.....	May 8, 1855.

CLASS XIV.—LUMBER; including machines and tools for preparing and manufacturing, such as sawing, planing, mortising, shingle and stove, carpenters' and coopers' implements.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12318	Augers .....	R. Jennings.....	Deep River, Conn.....	Jan. 30, 1855.
12551	Augers, &c., ship .....	Isaac W. Hoagland.....	Jersey City, N. J.....	Mar. 20, 1855.
12575	Augers, attaching to handles .....	Charles W. Cotton.....	Shelburne Falls, Mass.....	Mar. 20, 1855.
12583	Augers, machines for turning the lips of .....	Ransom Cook.....	Shelburne Falls, Mass.....	Mar. 27, 1855.
12868	Augers (bits, braces, securing in their sockets.) .....	Eben. W. Nichols.....	Worcester, Mass.....	May 15, 1855.
13261	Auger or bit, expanding.....	L. H. Gibbs.....	Washington, D. C.....	July 17, 1855.
13825	Auger-handles.....	G. H. Talbot.....	Boston, Mass.....	Dec. 11, 1855; English patent dated Aug. 25, 1855.
13943	Augers, adjustable, crank-brace for.....	John Gourley.....	Ogdensburg, N. Y.....	Dec. 18, 1855.
13998	Augers, (extension bit).....	John P. Rollins.....	Boston, Mass.....	Dec. 25, 1855.
12452	Barrel-heads, machine for cutting.....	Wm. L. Young.....	Muscatine, Iowa.....	Feb. 27, 1855.
12543	Barrel-heads, cutting.....	Archibald H. Crozier.....	Owego, N. Y.....	Mar. 20, 1855.
13016	Bench-rest.....	Joseph D. Spiller.....	Concord, N. H.....	June 5, 1855.
13678	Bench-hook.....	A. Hotchkin.....	Schenevus, N. Y.....	Oct. 16, 1855.
	Bit, extension. (See Augers.) .....			
	Bits, brace, securing in their sockets. (See Augers.) .....			
	Boring-engines, portable. (See Class VI.) .....			
	Boring and mortising hubs, machine for. (See Class X.) .....			
12437	Boring-machines, adjusting cylinders in.....	William B. Emery.....	Albany, N. Y.....	Feb. 27, 1855.
12598	Boring hubs to receive boxes, tool for.....	Urias Kimble.....	Peasfield, N. Y.....	Mar. 27, 1855.
12677	Boring hubs, tool for.....	H. C. Garvin and J. H. King.....	Hagerstown, Md.....	April 10, 1855.
12776	Boring and tenoning-machine, wheelwrights'. .....	Chauncey Cowdry, Orrin Tolls, & Chauncey E. Tolls.....	Ithaca, N. Y.....	May 1, 1855.
12808	Boring fence-posts, machine for.....	James Temple, assignor to Israel Ward and James Temple.....	Birmingham, Pa.....	May 1, 1855.
13158	Boring and turning wood, machine for.....	Adolph and Felix Brown.....	New York, N. Y.....	July 3, 1855.
13243	Boring posts and pointing rails, machine for.....	John Young, of C.....	Middletown, Md.....	July 10, 1855.



*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13606	Boring-machine.....	A. Wyckoff and E. R. Morrison.....	Elmira, N. Y.....	Sept. 25, 1855.
12149	Boxes, wooden, manufacturing.....	Louis Koch, assignor to Theodore Pinous.	New York, N. Y.....	Jan. 2, 1855.
13921	Carving wood, &c., machine for.....	J. M. Singer.....	New York, N. Y.....	Dec. 11, 1855.
13102	Chisels, socket, handles for.....	L. T. Richardson.....	Worcester, Mass.....	June 19, 1855.
13734	Clap-board machine.....	Aretus A. Wilder.....	Detroit, Mich.....	Oct. 30, 1855.
13-46	Coopers' tool.....	Joel P. Heacock.....	Marlboro', Ohio.....	Nov. 27, 1855.
13200	Cork-machine.....	John Power.....	Boston, Mass.....	July 3, 1855.
13714	Corks, machine for manufacturing.....	William R. Crocker.....	Norwich, Conn.....	Oct. 30, 1855.
13-96	Cutters, method of securing to rotary discs.	Jonah Newton.....	New York, N. Y.....	June 19, 1855.
13169	Cutting cavities, spherical, ellipsoidal, &c., machine for.	Isaac B. Hartwell.....	Woodstock, Vt.....	July 3, 1855.
12122	Dovetailing-machine.....	Thomas H. Burley.....	Cincinnati, Ohio.....	Jan. 2, 1855.
13522	Dovetailing-machine.....	John J. Haley.....	Philadelphia, Pa.....	Sept. 4, 1855.
13574	Dovetail key cutter.....	Amos P. Hughes.....	Philadelphia, Pa.....	Sept. 18, 1855.
13696	Dovetailing-machine.....	John Bell.....	Harlem, N. Y.....	Oct. 23, 1855.
13180	Dressing conical tapering surfaces, machine for.	Paul Peckham.....	Petersham, Mass.....	July 3, 1855.
13568	Felling trees, machine for.....	Thomas Durden.....	Montgomery, Ala.....	Sept. 18, 1855.
12174	Forms, irregular, machine for cutting.....	Warren Wadleigh.....	Hill, N. H.....	Jan. 2, 1855.
12192	Forms, irregular, machine for turning.....	William J. Caselman.....	Vernon, N. Y.....	Jan. 9, 1855.
12584	Forms, irregular, machine for cutting.....	J. S. Barber, assignor to Robert J. Marcher.....	Boston, Mass.....	May 15, 1855.
13076	Forms, irregular, machine for cutting.....	Avery Babbett.....	Bloomington Grove, N. Y.....	June 19, 1855.
13336	Forms, irregular, cutter-heads for.....	Daniel Dunlap.....	Auburn, N. Y.....	Aug. 7, 1855.
13511	Forms, irregular, machines for cutting.....	P. H. Wait.....	Concord, N. H.....	Aug. 28, 1855.
13897	Gimlet.....	C. C. Tolman, assignor to James Sargent and D. P. Foster.	Barkerville, N. Y.....	Dec. 4, 1855.
12429	Hoops, machine for manufacturing.....	Jacob Pierson.....	Shelburne Falls, Mass.....	Feb. 20, 1855.
13097	Hoops, wooden, machine for cutting locks and tapering ends of.	Royal Parce.....	Alexandria, Va.....	June 19, 1855.
13746	Lath-machine.....	A. Blaikie and W. Clark.....	Pitcher, N. Y.....	Nov. 6, 1855.

12924	Lathe for turning fancy handles, &c.	Luther Wentworth.	Burlington, Iowa.	Jan. 9, 1855.
12423	Lathes, slide-rest for	William Stephens.	Richmond, Ind.	Feb. 20, 1855.
12682	Lathe.	Warren Aldrich.	Lowell, Mass.	April 10, 1855.
12742	Lathes, slide-rest for	C. A. Noyes.	Pittsfield, Mass.	April 17, 1855.
12747	Lathes, slide-rest for	Chester Van Horn.	Springfield, Mass.	April 17, 1855.
12874	Lathe, slide.	E. K. Root.	Hartford, Conn.	May 15, 1855.
13787	Lathe-chuck.	Eli Horton.	Windsor Locks, Conn.	Nov. 13, 1855.
12580	Lumber-joining machines, clamp and mouth-piece for.	Charles F. Bauersfeld.	Cincinnati, Ohio.	Mar. 27, 1855.
12861	Lumber, gauge for slitting.	Francis P. Hart.	Chandlersville, Pa.	May 15, 1855.
13342	Lumber from the log, machine for dressing.	Albert Walcott.	Detroit, Mich.	July 24, 1855.
13142	Mandrel, guide, wheelwrights'.	Joseph Sykes.	Mercer, Pa.	June 26, 1855.
12276	Marquetry.	Louis Francis Groehl.	Philadelphia, Pa.	Jan. 23, 1855.
12297	Match machines.	Leopold and Joseph Thomas.	Alleghany City, Pa.	Jan. 23, 1855.
12482	Mitre and other joints, machine for cutting.	F. A. Gleason.	Rome, N. Y.	Mar. 6, 1855.
12796	Mitre-box.	Matthew Spear.	Bowdoinham, Me.	May 1, 1855.
12862	Mitre and bevelling machine.	Lorton Holliday.	Rogersville, N. Y.	May 15, 1855.
12956	Mitre-machine.	George W. La Bar.	Jersey City, N. J.	May 29, 1855.
13127	Mitre and bevel-square, carpenters'.	Jonas S. Halsted and Cornelius J. Ackerman.	New York, N. Y.	June 26, 1855.
12287	Mortising-machines, feeding.	R. P. Benton.	Rochester, N. Y.	Jan. 23, 1855.
12563	Mortising and tenoning machines.	Elihu Street.	Montville, Conn.	Mar. 20, 1855.
12691	Mortising blinds, machine for.	Benjamin T. Norris.	Lynn, Mass.	April 10, 1855.
13184	Mortises, method of cutting straight or curved.	Edward Q. Smith.	Cincinnati, Ohio.	July 3, 1855.
13271	Mortising window-blinds, machine for.	Jas. A. Peabody.	Lowell, Mass.	July 17, 1855.
13594	Mortising-machines, method of regulating length of stroke in.	Ezra Gould.	Newark, N. J.	Sept. 25, 1855.
13663	Mortising machine.	Hezekiah B. Smith.	Lowell, Mass.	Oct. 9, 1855.
13759	Mortising-machine.	Loonis E. Payne and Orris Pier.	Stowe, Vt.	Nov. 6, 1855.
12243	Moulding-machine.	George M. Ransey.	New York, N. Y.	Jan. 16, 1855.
12248	Moulding-machine.	C. B. Morse.	Rhinebeck, N. Y.	Jan. 16, 1855.
12916	Mouldings, tool for grooving.	Robt. J. Marcher.	Salisbury Mills, N. Y.	May 22, 1855.
12917	Mouldings, tool for grooving.	Robt. J. Marcher.	Salisbury Mills, N. Y.	May 22, 1855.
13602	Mouldings, ornamental, machine for cutting.	H. & Richard Schevenell.	Athens, Ga.	Sept. 25, 1855.
12234	Plane, bench.	William C. Hopper.	Pittsburg, Pa.	Jan. 16, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12787	Plane stock, bench .....	Geo. E. Davis.....	Lowell, Mass.....	May 1, 1855.
13174	Plane-stock, and their mouth-pieces, method of hanging.	M. G. Hubbard.....	New York, N. Y. ....	July 3, 1855.
13381	Plane-acraper .....	Leonard Bailey.....	Winchester, Mass. ....	Aug. 7, 1855.
13575	Plane-bit. ....	Horace Harris.....	Gorham, N. Y. ....	Sept. 18, 1855.
13626	Plane, crozing, coopers' .....	Hiram and John C. Taylor.....	Cincinnati, Ohio. ....	Oct. 2, 1855.
13745	Plane-iron, bench .....	H. A. Bleckman.....	Ronsdorf, Prussia.....	Nov. 6, 1855.
13757	Planes, rotary, cutter-head for .....	William Nixon.....	Adrian, Mich. ....	Nov. 6, 1855.
13857	Plane for finishing grooves in gutters, &c.	John P. Robinson.....	Mattawan, N. Y. ....	Dec. 18, 1855.
12162	Planing-machines, mode of hanging the knife in.	M. G. Hubbard.....	New York, N. Y. ....	Jan. 2, 1855.
12211	Planing and matching machine.....	C. B. Morse.....	Rhinebeck, N. Y. ....	Jan. 9, 1855.
12438	Planing-machines, method of adjusting stuff in	William B. Emery.....	Albany, N. Y. ....	Feb. 27, 1855.
12880	Planing-machines, devices for adjusting...	Leonard Tilton .....	New York, N. Y. ....	May 15, 1855.
13345	Planing-machines, method of feeding planks to.	Nelson Barlow.....	Newark, N. J. ....	July 31, 1855.
13536	Planing-machines, universal dog for.....	Solomon S. Gray, assignor to S. S. Gray and S. A. Woods.	South Boston, Mass.....	Sept. 4, 1855.
13618	Planing-machines, feed-motion for .....	S. C. and W. W. Hurlbut.....	Boonville, N. Y. ....	Oct. 2, 1855.
13808	Planing-machines.....	Jas. A. Woodbury.....	Winchester, Mass.....	Nov. 13, 1855.
13947	Planing felloes, machine for .....	Wm. W. Johnson.....	Clifford, Pa. ....	Dec. 18, 1855.
13937	Rails, stair .....	C. M. Swany.....	Richmond, Ind.....	July 10, 1855.
12891	Saddle-trees, wooden .....	George B. Ambler .....	Trumbull, Conn.....	May 22, 1855.
12797	Sash, &c., machine for clamping .....	Solomon P. Smith.....	Half Moon, N. Y. ....	May 1, 1855.
12126	Saws, circular, construction and mode of driving.	Thomas J. Flanders.....	Manchester, N. H.....	Jan. 2, 1855.
12170	Saw, path-finding, method of hanging a...	John A. Taplin.....	Fishkill, N. Y. ....	Jan. 2, 1855.
12176	Saving-machine.....	Lyander Might.....	Newark, N. J. ....	Jan. 2, 1855.
12197	Saws, circular, arranging and driving .....	William B. Emery .....	Albany, N. Y. ....	Jan. 9, 1855;
				Nov. 13, 1854.
12337	Saving-machines .....	Pinney Youngs.....	Milwaukee, Wis.....	Jan. 30, 1855.

antedated

		George P. Ketchum	Bedford, Ind.	
19419	Saws, reciprocating, method of driving pairs of.	Linus Stewart.....	Washington, D. C.....	Feb. 20, 1855.
12493	Saw-plates, constructing and setting teeth therein.	Nelson Barlow.....	Newark, N. J.....	Mar. 6, 1855.
12664	Saw-teeth .....	Chas. B. Hutchinson.....	Auburn, N. Y.....	April 10, 1855.
12679	Saws, guiding reciprocating.....	Hiram Wells.....	Florence, Mass.....	April 10, 1855.
12705	Saw, circular, spindles to yield, device allowing.	E. A. Tubbs, assignor to E. A. Tubbs and H. J. Croxton.	Hampton, N. H.....	May 1, 1855.
12809	Sawing firewood, &c., machine for.....	Simon Ingersoll.....	Greenwich, Conn.....	May 8, 1855.
12821	Sawing or felling trees, machine for.....	Francis A. Wolff.....	Ripley, Miss.....	May 8, 1855.
12843	Sawing a log by its own weight, method of.	Charles M. Day.....	New York, N. Y.....	June 12, 1855.
13028	Saw-mills, &c., feed-motion for .....	Isaac M. Newcomb.....	Eden, Vt.....	June 12, 1855.
13040	Sawing-machine.....	A. S. Rice and Guy Tozer.....	Barton, N. Y.....	June 12, 1855.
13043	Saw-mill dog .....	Shelden Warner.....	Enfield, Mass.....	June 12, 1855.
13055	Sawing, curvilinear, machine.....	F. A. Parker .....	Shafsbury, Vt.....	July 10, 1855.
13227	Saw-seis .....	Frederick Field.....	Toledo, Ohio.....	July 31, 1855.
13251	Sawing, cross-cut, machine.....	Matthew Ludwig.....	Boston, Mass.....	July 17, 1855.
13277	Sawing down trees, machine for.....	Benjamin Fulghum.....	Richmond, Ind.....	July 24, 1855.
13305	Sawing-machine.....	F. H. Keeney .....	Newport, Ky.....	July 31, 1855.
13357	Saw, circular, mandrel .....	A. F. Gray and J. C. Fincher.....	Thibodeaux, La.....	Aug. 7, 1855.
13390	Saws, hand, gauge attachment for .....	B. E. Parkhurst .....	Brunswick, Me.....	Aug. 7, 1855.
13399	Sawing lumber, machine for.....	A. Brown and A. Coffin, Jr.....	Sabine City, Texas.....	Aug. 14, 1855.
13422	Saws, straining, by atmospheric pressure.	S. R. Wilmot.....	New York, N. Y.....	Aug. 14, 1855.
13444	Sawing-machines, portable steam.....	E. Strange and T. B. Smith.....	Taunton, Mass.....	Sept. 4, 1855.
13531	Sawing hoops, machines for.....	Robert T. Eastham.....	Blanchester, Ohio.....	Sept. 11, 1855.
13544	Saw-mill carriages.....	O. S. Woodcock .....	Connersville, Ind.....	Sept. 11, 1855.
13554	Saws, reciprocating, method of operating.	Dean S. Howard .....	Lynedale, N. Y.....	Sept. 18, 1855.
13573	Sawing-mill.....	George W. Worden.....	Fayetteville, N. Y.....	Oct. 9, 1855.
13670	Sawing-machines, gauge attachment for..	Luther B. Fisher.....	Cold Water, Mich.....	Oct. 30, 1855.
13715	Saw-mill dogs, device for gauging and setting.	Liveras Hull.....	Charlestown, Mass.....	July 31, 1855.
13719	Sawing ratan, machines for.....	Horace Lane.....	Windsor, Vt.....	Nov. 6, 1855.
13755	Saw-horse .....	J. N. Forrester.....	Centerville, Va.....	Oct. 30, 1855.
13916	Saws, muley, method of hanging.....	Amos D. Highfield, assignor to himself and Wm. H. Harrison.	Philadelphia, Pa.....	Dec. 4, 1855.
13932	Saws, circular, method of adjusting, obliquely to their shafts.	T. C. Bush.....	New London, Conn.....	Dec. 18, 1855.
13938	Saw-set .....	H. C. Green.....	Clarence, Wis.....	Dec. 18, 1855.
13944	Saw-mills, automatic feed-motion for.....			

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13964	Saw-set .....	J. Spaulding .....	Saratoga Springs, N. Y. ....	Dec. 18, 1855.
13982	Saws, method of hanging .....	Soranus Dunham .....	North Bridgewater, Mass. ....	Dec. 25, 1855.
13989	Saws, circular, method of hanging .....	W. W. Hurlbut .....	Boonville, N. Y. ....	Dec. 25, 1855.
12137	Shingle machine .....	Adrian V. B. Orr .....	Steelville, Pa. ....	Jan. 2, 1855.
12206	Shingle, rotary, machine .....	J. W. Hatcher .....	Columbia, Tenn. ....	Jan. 9, 1855.
12606	Shingle-machine .....	Charles Leavitt .....	Quincy, Ill. ....	Mar. 27, 1855.
12-42	Shingle-machine .....	Andrew P. Wilson .....	Piqua, Ohio .....	May 8, 1855.
12848	Shingles or wedges, machine for sawing { Shingles, &c, machine for riving .....	John Taggart, assignor to himself and Nehemiah Hunt .....	Roxbury, Mass. ....	May 8, 1855.
13155	Shingles, &c, machine for riving .....	A. C. Billings and B. H. Ruggles .....	Boston, Mass. ....	July 3, 1855.
13475	Shingles, machine for sawing .....	Charles Ketchum, assignor to Charles G. Judd and Andrew Oliver .....	Palmer, Mass. ....	Aug. 21, 1855.
13555	Shingle-machines, construction of beds for Shingle-bolt, method of feeding the, to knives .....	Henry J. Weston .....	Pen Yan, N. Y. ....	Sept. 11, 1855.
13666	Shingle-machine .....	Wm. J. Scott .....	Buffalo, N. Y. ....	Oct. 9, 1855.
13958	Shovel-handles, machine for cutting the inside hold of .....	J. Tiffany and M. Harris .....	Carthage, N. Y. ....	Dec. 18, 1855.
13084	Silvers, cutting wood into, machine for... Spike-machine .....	G. Fetter and J. L. Pennock .....	Painesville, Ohio .....	June 19, 1855.
12424	Silvers, cutting wood into, machine for... Spike-machine .....	S. R. Smith and E. Cowles .....	Holmesburg, Pa. ....	Dec. 18, 1855.
12459	Silvers, cutting wood into, machine for... Spike-machine .....	Ass Landphere and S. Remington .....	Hadley, Mass. ....	Feb. 20, 1855.
13408	Silvers, cutting wood into, machine for... Spike-machine .....	Wm. Van Anden .....	Albion, Pa. ....	Feb. 27, 1855.
13731	Silvers, cutting wood into, machine for... Spike-machine .....	Owen Redmond .....	Poughkeepsie, N. Y. ....	Aug. 7, 1855.
13-82	Silvers, cutting wood into, machine for... Spike-machine .....	Thomas R. Markillie .....	Rochester, N. Y. ....	Oct. 30, 1855.
12221	Slave-jointer .....	James W. Treadway .....	Winchester, Ill. ....	Dec. 4, 1855.
12900	Slave-machine .....	Daniel Drawbaugh .....	Crown Point, N. Y. ....	Jan. 9, 1855.
13035	Slaves, machine for planing .....	M. T. Kennedy .....	Eberly's Mills, Pa. ....	May 22, 1855.
13036	Slaves, joining, machine for .....	M. T. Kennedy .....	Fallston, Pa. ....	June 12, 1855.
13045	Slave-machine .....	George H. Swan .....	Fallston, Pa. ....	June 12, 1855.
13230	Slave-machine .....	William Robinson .....	Bridgeport, Conn. ....	June 12, 1855.
13631	Slaves, gauging, measuring, &c, machine for Tenons, machines for cutting .....	Larkin T. Atkins .....	Augusta, Ga. ....	July 10, 1855.
12416	Slaves, gauging, measuring, &c, machine for Tenons, machines for cutting .....	Joel Hastings, Jas. Ramsey, and H. G. Chamberlain .....	Lauray, Va. ....	Oct. 9, 1855.
			St. Johnsbury, Vt. ....	Feb. 20, 1856

12449	Tenoning-machine.....	William Steele.....	Wheeling, Va.....	Feb. 27, 1855.
12664	Tenoning-tool, adjustable .....	Thomas J. Knapp .....	Philadelphia, Pa.....	May 16, 1855.
13049	Tenoning-machine .....	Christopher Sharps and Geo. E. Adriaance	Hector, N. Y.....	June 12, 1855.
13735	Tenons, double, machine for cutting.....	C. P. S. Wardwell.....	Lake Village, N. H.....	Oct. 30, 1855.
	Tenoning and boring-machine, wheel-			
	wrights'. (See Boring-machine.)			
12134	Tonguing and grooving.....	Hazard Knowles .....	New York, N. Y.....	Jan. 2, 1855.
12180	Turning elliptical cylinders, chuck for.....	P. S. Cahoon and S. F. Ross.....	La Grange, Mo.....	Jan. 2, 1855.
13104	Turning eccentrics, chuck for.....	John W. Russell .....	Springfield, Mass.....	June 19, 1855.
13203	Turning ship-spars, &c., automatic ma-	William Blackburn.....	Jersey City, N. J.....	July 10, 1855.
	chine for.			
13301	Turning cylinders of wood, &c., machine	Matthew F. Connell.....	Plainfield, N. J.....	July 24, 1855.
	for.			
13399	Veneers, embossed, application of.....	Israel Amies.....	Philadelphia, Pa.....	Dec. 11, 1855.
13959	Ware, wooden, machine for manufacturing	David Pierce .....	Woodstock, Vt.....	June 19, 1855.
12857	Wood, machine for splitting.....	Jacob A. Conover .....	New York, N. Y.....	May 15, 1855.
13485	Wood, fire, machine for splitting.....	William O. Biabes.....	Camden, N. J.....	Aug. 28, 1855.
13492	Wood-splitting machine, rotary .....	G. W. B. Gedney.....	New York, N. Y.....	Aug. 28, 1855.

CLASS XV.—STONE AND CLAY MANUFACTURES, including machines for pottery, glass-making, brick-making, dressing and preparing stone, cements, and other building materials.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12264	Block, building .....	A. Foster and E. A. Messinger, adminis't, and Wm. A. Spencer, adm'r of John A. Messinger, deceased, assignees to A. Foster.....	Portland, Wis.....	Jan. 16, 1855.
12558	Bricks, burning. (See Kilns.)	L. E. Ransom .....	Milwaukee, Wis.....	June 5, 1855.
12998	Bricks, manufacture of .....	John Chase, jr.....	Havana, N. Y.....	Mar. 20, 1855.
12997	Brick-presses.....	W. H. Degges .....	Pequonock, Conn.....	May 22, 1855.
12997	Brick-machines, soak pits of.....	W. H. Degges .....	Washington, D. C.....	June 5, 1855.
12998	Brick-machine.....	W. H. Degges.....	Washington, D. C.....	June 5, 1855.
13042	Bricks, cutting clay into .....	John Plumbé.....	San Francisco, Cal.....	June 12, 1855.

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13110	Brick-machine.....	Levi Till.....	Sandusky, Ohio.....	June 19, 1855.
13123	Brick and tile machines.....	Henry Clayton.....	Dorset Square, England.....	June 26, 1855; English patent dated Dec. 13, 1852
13129	Brick-machines.....	A. V. Hough.....	Green Castle, Ind.....	June 26, 1855.
13239	Brick-presses.....	Stephen Ustick.....	Philadelphia, Pa.....	July 10, 1855.
13502	Brick-machines.....	Levi Till.....	Sandusky, Ohio.....	Aug. 28, 1855.
13533	Brick-machines.....	Joseph Alex. Victor.....	Montgomery county, Ky.....	Sept. 4, 1855.
13572	Brick-machines.....	G. W. B. Gedney.....	New York, N. Y.....	Sept. 18, 1855.
13747	Brick-machines.....	Alex. H. Brown.....	Washington, D. C.....	Nov. 6, 1855.
13917	Clay, machines for kneading.....	H. H. Thayer.....	Sandwich, Mass.....	June 5, 1855.
13224	Clay, machines for pulverizing.....	John O'Neil.....	Kingston, N. Y.....	July 10, 1855.
13245	Glass, plate, manufacturing, from cylinders.	William P. Walter.....	Philadelphia, Pa.....	July 10, 1855.
13411	Glass, plate, manufacture of.....	Philip Stenger, assignor to Pascal Yersley.....	France.....	Aug. 7, 1855.
12820	Granite, &c., artificial, facing-beds for grinding.	Benjamin Hardinge.....	Philadelphia, Pa.....	May 8, 1855.
12242	Kilns, lime.....	Samuel H. Robinson.....	Baltimore, Md.....	Jan. 16, 1855.
12521	Kilns, brick.....	Jesse Russell.....	Elkton, Ky.....	Mar. 13, 1855.
12991	Kilns (burning bricks).....	Daniel and George M. Blocher.....	Cumberland, Md.....	June 5, 1855.
13194	Kilns, lime.....	Daniel Herr (Pequea).....	Lancaster, Pa.....	Aug. 28, 1855.
12813	Marble and stone saws.....	John T. Bruen.....	New York, N. Y.....	May 8, 1855.
13074	Machines, stone-sawing.....	Joseph Adams.....	Fairhaven, Vt.....	June 19, 1855.
13540	Marble, machines for sawing.....	John Cochran.....	Baltimore, Md.....	Sept. 11, 1855.
13591	Machines, stone-sawing.....	C. G. Beitel and Henry J. Brunner.....	Nazareth, Pa.....	Sept. 25, 1855.
13742	Marble, machines for sawing.....	Henry Burt.....	Newark, N. J.....	Nov. 6, 1855.
13762	Marble-sawing machine.....	R. G. Pine.....	Newark, N. J.....	Nov. 6, 1855.
13773	Marble-sawing machine.....	George W. Biahup.....	Brooklyn, N. Y.....	Nov. 13, 1855.
13777	Marble-sawing machine.....	William C. Chipman.....	Sandwich, Mass.....	Nov. 13, 1855.
13784	Marble-sawing machine.....	Luther B. Fisher.....	Cold Water, Mich.....	Nov. 13, 1855.
13788	Marble-sawing machine.....	George W. Hubbard.....	Middletown, Conn.....	Nov. 13, 1855.
13791	Marble-sawing machine.....	Wm. B. Kimball.....	Peterboro', N. H.....	Nov. 13, 1855.

13305	Marble-sawing machine .....	Charles T. Warren .....	Malden, Mass. ....	Nov. 13, 1855.
13329	Marble-sawing machine .....	F. Noette and A. Schmidt .....	Brooklyn, N. Y. ....	Nov. 30, 1855.
13360	Marble, tapering blocks of, machines for sawing out. ....	John A. Cole .....	Washington, D. C. ....	Dec. 4, 1855.
13916	Marble, &c., machines for sawing in taper form. ....	George T. Pearsall .....	Appalachin, N. Y. ....	Dec. 11, 1855.
13164	Sand, machines for washing .....	George Finley .....	Collins township, Pa. ....	July 3, 1855.
12164	Slate, machines for cutting and trimming. ....	Asa Keyes .....	Brattleboro', Vt. ....	Jan. 2, 1855.
12270	Stone, instrument for cutting out. ....	Henry J. Brunner .....	Nazareth, Pa. ....	Jan. 23, 1855.
12531	Stone pasteboard, manufacture of .....	James Smith .....	Mendon, N. Y. ....	Mar. 13, 1855.
12656	Stone, machine for raising and transporting. ....	Solomon E. Bolles .....	Rochester, Mass. ....	April 10, 1855.
12766	Stone, machines for polishing .....	Louis S. Robbins .....	New York, N. Y. ....	April 24, 1855.
13116	Stone, artificial, manufacture of .....	Thomas Hodgson, assignor to Robert L. Wright. ....	Brooklyn, N. Y. ....	June 19, 1855; English patent dated May 9, 1854.
13343	Stone, dressing and carving, machinery for. ....	Elias A. Swan and De Witt C. Smiley .....	Brooklyn, N. Y. ....	July 24, 1855.
13396	Stone, channelling, machine for .....	John Taggart, assignor to himself and Vernon Brown. ....	Roxbury, Mass. ....	Dec. 4, 1855.
13952	Stone-dressing machines .....	Oldin Nichols and A. M. George .....	Lowell, Mass. ....	Dec. 18, 1855.
	Stone and marble saws. (See Marble-sawing machines.) .....			
	Stone-sawing machine. (See Marble-sawing machines.) .....			
	Stone-sawing, machines for. (See Marble-sawing machines.) .....			
	Tile-machines. (See Class IX.) .....			

CLASS XVI.—LEATHER, including tanning and dressing, manufacture of boots, shoes, saddlery, harness, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent
12128	Boot and shoe soles, machines for cutting out. ....	Jesse W. Hatch and Henry Churchill .....	Rochester, N. Y. ....	Jan. 2, 1855.
12607	Boots and shoes, manufacture of .....	Henry G. Tyer and John Helm .....	New Brunswick, N. J. ....	Mar. 27, 1855.
12670	Boot forms .....	John Chilcott and Robt. Snell .....	Brooklyn, N. Y. ....	April 10, 1855.
12793	Boot and shoe stretchers .....	Warren Holden .....	Philadelphia, Pa. ....	May 1, 1855.
12794	Boot-cripping machines .....	Hosea B. Horton .....	Northville, Mich. ....	May 1, 1855.
12816	Boot-cripps .....	Thomas Daugherty .....	Erle, Pa. ....	May 8, 1855.



## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12877	Boots and shoes, machine for polishing the soles of.	J. H., J. M., and H. Q. Thompson .....	Holderness, N. H. ....	May 15, 1855.
12985	Boots and shoes, (pegging, hand, machines)	Alf Swingle, assignor to Elmer Townsend.	Boston, Mass .....	May 29, 1855.
13003	Boot and shoe counters, machine for skiving.	Luther Hill .....	Stoneham, Mass .....	June 5, 1855.
13023	Boot-cripping machines .....	G. W. Zeigler .....	Tiffin, Ohio .....	June 5, 1855.
13063	Boot and shoe soles, machines for cutting the edges of.	Jean Pierre Molliere .....	Lyons, France .....	June 12, 1855; French patent dated Jan. 5, 1855.
13072	Boot and shoe soles, machines for cutting out.	Caleb H. Griffin, assignor to C. H. Griffin and Geo. W. Otis.	Lynn, Mass .....	June 12, 1855.
13073	Boots and shoes, attaching gutta-percha soles to.	Jno. M. Wimley, assignor to J. A. B. Shaw.	Philadelphia, Pa. ....	June 12, 1855.
13095	Boot and shoe soles and heels, machines for cutting leather into strips for.	Jean Pierre Molliere .....	Lyons, France .....	June 19, 1855; French patent dated July 22, 1853.
13101	Boot and shoe peg cutters .....	Henry E. Chapman .....	Albany, N. Y. ....	Dec. 11, 1855.
13144	Boots and shoes, pegging, hand-machines for	Reuben H. Thompson .....	Buffalo, N. Y. ....	June 26, 1855.
13272	Soles, attaching metallic heels to India-rubber.	S. T. Parmelee .....	New Brunswick, N. J. ....	July 17, 1855.
13296	Boot and shoe uppers, soles, &c., machines for cutting, from sheets of India-rubber.	John and Evan Arthur .....	New Brunswick, N. J. ....	July 24, 1855.
13796	Boot and shoe uppers, machines for cutting.	Jean Pierre Molliere .....	Lyons, France .....	Nov. 13, 1855; French patent dated Aug. 19, 1855.
13798	Shoes, lasting, and applying soles to ... {	Charles Rice and .....	Boston, Mass. ....	Nov. 13, 1855.
13827	Boots and shoes, machine for preparing leather for the manufacture of.	Sylvanus H. Whorf. ....	Roxbury, Mass .....	Nov. 20, 1855.
13852	Boots, uppers of, mode of cutting the .....	Charles Rice and S. H. Whorf. ....	Boston, Mass. ....	Nov. 27, 1855.
13854	Boots and shoes, machines for rasping and dressing the heels and soles of.	John S. Lewis .....	Athol, Mass .....	Nov. 27, 1855; French patent dated Jan. 5, 1855.
13867	Shoe-soles, &c., instrument for chamfering the edges of.	Jean Pierre Molliere .....	Lyons, France .....	Dec. 4, 1855.
13876	Boot and shoe soles, cutting out, machine for	O. R. Dinsmoor and L. J. Bartlett. ....	Salisbury, N. H. ....	Dec. 4, 1855.
		Jesse W. Hatch .....	Rochester, N. Y. ....	Dec. 4, 1855.

13986	Boots-trees.....	James H. Sampson.....	Grafton, Mass.....	Dec. 4, 1855.
13914	Boots and shoes, soles and heels of, machines for cutting out, pricking, and stamping the.	J. P. Mollere.....	Lyons, France.....	Dec. 11, 1855; French patent dated July 22, 1853.
13950	Boots and shoes, soles and heels of, machines for polishing and burnishing the edges of.	J. P. Mollere.....	Lyons, France.....	Dec. 18, 1855; French patent dated Jan. 5, 1856.
13951	Boots and shoes on lasts, "uppers" of, machines for mounting the.	J. P. Mollere.....	Lyons, France.....	Dec. 18, 1855; French patent dated Aug. 19, 1856.
13119	Bridle-winkers.....	William and William F. Boyd.....	Watertown, Mass.....	June 26, 1855.
13306	Bridle-reins.....	Kington Goddard.....	Philadelphia, Pa.....	July 24, 1855.
12397	Bridle-bits.....	Wm. D. Titus and Robert W. Fenwick.....	Brooklyn, N. Y.....	Feb. 13, 1856.
12494	Collars, horse, machines for stuffing.	William L. Whitaker.....	Cumberland, Md.....	Mar. 6, 1856.
13087	Collars, horse, expanding block for.	Robert R. Gray.....	Crawfordville, Ind.....	June 19, 1855.
13132	Collar, horse, blocks.....	Peter Moody.....	Indianapolis, Ind.....	June 26, 1855.
13189	Collar, horse, blocks.....	T. J. Van Benschoten.....	Poughkeepsie, N. Y.....	July 3, 1856.
13049	Collars, horse, machines for stuffing.	S. B. McCorkle.....	Greenville, Tenn.....	Dec. 18, 1855.
13965	Collar, horse.....	Samuel Shattuc.....	Henrietta, Ohio.....	Dec. 18, 1856.
13358	Harness saddle-trees. (See Saddle-trees.)	S. E. Tompkins.....	New York, N. Y.....	Nov. 27, 1855.
12171	Hides, unhairing, compositions for. (See Class IV.)	Cuno Werner.....	Philadelphia, Pa.....	Jan. 2, 1855.
12296	Leather, compositions for dressing.	Hiram L. Hall, assignor to James C. Stimpson.....	Beverly, Mass.....	Jan. 9, 1856.
12392	Leather, japanned, processes for making.	M. H. Merriam and J. B. Crosby.....	Chester, Mass.....	Feb. 13, 1855.
12444	Leather-splitting machines.....	Charles Morris.....	Stonham, Mass.....	Feb. 27, 1855.
12806	Leather straps, machine for shaving.	New Haven, Conn.....	New Haven, Conn.....	May 1, 1855.
12878	Leather and morocco, machines for polishing.	Nathan Ames, assignor to Samuel Green.....	Saugus, Mass.....	May 15, 1855.
13071	Leather straps, machines for creasing the edges of.	W. M. Thornton.....	Pottsville, Pa.....	June 12, 1855.
13407	Leather, ruling, machine for.....	Joshua Turner, jr., assignor to A. Bennett and W. Corvill.....	Charlestown, Mass.....	Aug. 7, 1855.
13605	Leather-splitting machines, bed-spring of.	John B. Jay.....	North Woburn, Mass.....	Sep. 25, 1855.
13756	Leather-finishing machine.....	Charles, and T. F., and J. W. Weston.....	Salem, Mass.....	Nov. 20, 1855.
13819	Leather, machines for splitting.....	J. A. Marden and H. A. Butten.....	Newburyport, Mass.....	Nov. 30, 1855.
13819	Leather for enamelling, treating.....	Theodore P. Howell and N. F. Blanchard.....	Haverhill, Mass.....	Nov. 30, 1855.
			Newark, N. J.....	

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13920	Leather, cutting articles from, machines for. Leather, compositions for bleaching and stuffing. (See Class IV.) Pegging, hand, machines. (See Boots and shoes.)	Charles Rice and S. H. Whorf .....	Boston and Roxbury, Mass.....	Dec. 11, 1855.
12451	Saddle-trees, harness.....	Julius C. Dickey.....	Saratoga Springs, N. Y.....	Nov. 27, 1855.
13313	Saddle-trees.....	Daniel Campbell.....	Washington, D. C.....	July 10, 1855.
13364	Saddles, military.....	Daniel Campbell.....	Washington, D. C.....	Dec. 4, 1855.
13240	Stirrups, open..... Tanneries, working tanning vats in. (See Class IV.) Tannin from leather, processes for extracting. (See Class IV.) Tanning processes.....	O. D. Voorners..... Rufus Keeler, assignor to Lewis C. Englund..... George W. Smith..... Otis B. Wattles.....	Mount Sterling, Ky..... Rochester, N. Y..... New York, N. Y..... Nanticoke, N. Y..... Waddington, N. Y.....	Nov. 27, 1855. July 10, 1855. Dec. 4, 1855. July 10, 1855. Jan. 9, 1855. Aug. 7, 1855. Aug. 14, 1855.
12148	Tanning apparatus.....			
13403	Tanning compounds.....			
13443	Trunks, attaching castors to. (See Class XXII.)			

CLASS XVII.—HOUSEHOLD FURNITURE, MACHINES AND IMPLEMENTS FOR DOMESTIC PURPOSES, including washing machines, bread and cracker machines, feather-dressing, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12689	Apples, paring, machine for .....	Samuel N. Maxam .....	Shelburne Falls, Mass.....	April 10, 1855.
13891	Apples, paring and slicing, machines for..	Levi Van Hoesen .....	New Haven, Conn.....	Dec. 4, 1855.
12656	Bedsteads, folding.....	William Stoddard.....	Hingham, Mass.....	April 3, 1855.

12905	Bedstead rails, machine for cutting screws on.	Henry Gross.	Tiffin, Ohio.	May 22, 1855.
12940	Bedsteads, invalid.	Thomas Arnold, assignor to Wm. and J. S. Arnold & Co.	Mobile, Ala.	May 29, 1855.
12944	Bedsteads, invalid.	E. Daniels	Union, N. Y.	May 29, 1855.
13034	Bedsteads.	Florian Herz	Cincinnati, Ohio.	June 12, 1855.
13068	Bed, spring, bottoms	Hiram Tucker	Cambridgeport, Mass.	July 3, 1855.
13225	Bedsteads, machine for cutting screws on	O. Parkhurst and D. Bullock	Cohoes, N. Y.	July 10, 1855.
13253	Bedsteads, invalid.	Benjamin Eastman	Philadelphia, Pa.	July 17, 1855.
13263	Bedstead, alarm	J. Carroll House	Lowville, N. Y.	July 17, 1855.
13265	Bedsteads.	Tyler Howe	Cambridgeport, Mass.	July 17, 1855.
13607	Bedsteads.	William White	Portsmouth, Va.	Sept. 25, 1855.
13736	Bedstead fastenings	John W. Yethers	Spruce Grove, Pa.	Oct. 30, 1855.
13803	Bedstead screws, forming heads on.	H. N. Sherman	Birmingham, Conn.	Nov. 13, 1855.
13849	Bedsteads.	Benj. Hinkley	Troy, N. Y.	Dec. 11, 1855.
12479	Bread, processes for making	Charles Cram	Hudson, N. Y.	Mar. 6, 1855.
12182	Brush, paint.	William Hicks	Steubenville, Ohio	Jan. 2, 1855.
12309	Brush, fountain.	Dexter H. Chamberlain and John Hartshorn.	Boston, Mass.	Jan. 30, 1855.
12876	Butter-coolers	James H. Stimpson	Baltimore, Md.	May 15, 1855.
12911	Cans, preserve, devices for sealing.	W. H. Elliot	Plattsburgh, N. Y.	July 17, 1855.
13657	Cans, double-seaming, machines for	Elliot Savage and Noah C. Smith.	East Berlin, Conn.	Oct. 9, 1855.
13707	Cans, sealing preserve	Stimmel Lutz.	Philadelphia, Pa.	Oct. 23, 1855.
13109	Carpets, fastenings for.	Wm. S. Loughborough	Rochester, N. Y.	June 5, 1855.
13194	Carpets, fastenings for.	Felix Miller	New York, N. Y.	June 19, 1855.
13220	Carpets, fastenings for.	Enoch Jackson and Edwin G. Dunham.	Portland, Conn.	July 10, 1855.
12578	Castors for furniture.	Gilbert L. Bailey, assignor to G. L. Bailey and M. Nutting.	Portland, Maine.	Mar. 20, 1855.
12357	Chair and crib, combined, for children.	Wm. B. Carpenter.	New York, N. Y.	Feb. 6, 1855.
12587	Chairs.	Lemuel W. Ferris.	Owego, N. Y.	Mar. 27, 1855.
13479	Chairs, folding.	John Cram, assignor to John and John S. Cram.	Boston, Mass.	Aug. 21, 1855.
13765	Clamps, clothes.	James Sedgebury	Philadelphia, Pa.	Nov. 6, 1855.
12775	Clothes pin machine.	H. & M. Blake.	Hartland, Vt.	May 1, 1855.
13447	Coffee-roaster	Saml. Pierce, assignor to Curtis B. Pierce.	Troy, N. Y.	Aug. 14, 1855.
13595	Coffee pot.	Joshua E. Hall.	Cleveland, Ohio.	Sept. 25, 1855.
12283	Cracker-machines	Phineas Emmons.	New York, N. Y.	Feb. 13, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12271	Curtains, rollers for.....	Dexter H. Chamberlain and John Hartshorn.	Boston, Mass.....	Jan. 23, 1855.
12361	Curtain-rollers, fixtures for.....	John Hartshorn and Dexter H. Chamberlain, assignors to John Hartshorn.	Boston, Mass.....	April 3, 1855.
12594	Curtain-rollers.....	Frederick W. Uraun.....	Saxonsville, Mass.....	Mar. 13, 1855.
12540	Curtains, knobs for fastening, and for other like purposes.	W. Z. W. & J. W. Chapman.....	New York, N. Y.....	Mar. 20, 1855.
12792	Curtains, spring-rollers for.....	John & Jacob Hartshorn.....	Boston, Mass.....	May 1, 1855.
12866	Curtain-fixtures.....	Perchee Miles.....	Hartford, Conn.....	May 15, 1855.
12881	Curtain, spring, rollers.....	Benjamin B. Webster.....	Boston, Mass.....	May 15, 1855.
13150	Curtain-fixtures.....	Peter H. Niles, assignor to P. H. Niles and Jonathan A. Richards.	Boston, Mass.....	Jan. 9, 1855.
13481	Curtain-rollers.....	Dexter H. Chamberlain.....	West Roxbury, Mass.....	Aug. 21, 1855.
13588	Curtain-fixtures.....	Peter H. Niles, assignor to R. C. Webster	Boston, Mass.....	Sept. 18, 1855; antedated
13931	Curtains, mosquito..... Desk, writing, combined table and. (See Tables.)	John S. Martin.....	Boston, Mass.....	Mar. 18, 1855. Dec. 11, 1855.
19217	Diab-covers, wire, machine for making. (See Class II.)	John Lewis Eolland.....	Paris, France.....	Jan. 9, 1855; French patent dated April 11, 1861.
12640	Dumb-waiters, pulley arrangements for...	Andrew Murtaugh.....	New York, N. Y.....	April 3, 1855.
13834	Graters, nutmeg.....	Hiram Caraley, assignor to himself and Edmund Brown.	Lynn, Mass.....	Nov. 20, 1855.
12419	Griddle.....	C. Wilson.....	New York, N. Y.....	Feb. 20, 1855.
12460	Hominy-machine.....	Ezra Fahney.....	Mount Morris, Ill.....	May 15, 1855.
13883	Knives, scouring, machines for.....	G. M. Morris and J. Newton.....	Watertown, Conn.....	Dec. 4, 1855.
12373	Meat and other substances, machines for chopping.	W. H. Allen.....	Lowell, Mass.....	Feb. 13, 1855.
12530	Meats, processes of curing. ?.....	John C. Schooley.....	Cincinnati, Ohio.....	Mar. 13, 1855.

Class XIII.)		course, &c. (See	
193365	Mop heads.....	James A. Taylor.....	Alden, N. Y.....
13347	Mop-wringer.....	Oliver D. Barrett.....	Fulton, N. Y.....
13312	Mop-heads.....	Alexander Barnes.....	Ahtabula, Ohio.....
3136	Pitchers, too.....	Samuel Eakin.....	Philadelphia, Pa.....
3400	Pitchers, molasses.....	Edward Page.....	Worcester, Mass.....
12210	Refrigerators.....	H. L. McAvoy.....	Baltimore, Md.....
33369	Refrigerators.....	William Mootry.....	New York, N. Y.....
14004	Sad iron heaters.....	J. D. Wheelock.....	Mayesville, Wis.....
13660	Scrapers for removing dirt from boots and shoes.....	Ozro A. Crane and Henry J. Lewis, assignors to Ozro A. Crane.....	Green Point, N. Y.....
Sewing-machine cases. (See Class III.)			
13566	Smoothing-irons, heaters for.....	Newell Cleveland and James J. Johnston.....	Alleghany City, Pa.....
12548	Tables, extension.....	Joel Haines.....	West Middleburgh, Ohio.....
12568	Table-leaves, mode of supporting.....	Henry A. Frost.....	Worcester, Mass.....
12765	Tables (combined table and writing desk.)	Lucius Paige.....	Cavendish, Vt.....
Tee-pot spouts and handles, casting. (See Class II.)			
12518	Washing-machines.....	Elijah Morgan.....	Morgantown, Va.....
12653	Washing-machines.....	George W. Edgcomb.....	Lima, Ind.....
13757	Washing-machines, spring connecting-rods for.....	Jason W. Corey.....	Crawfordsville, Ind.....
12996	Washing-machines.....	Lewis W. Colver.....	Louisville, Ky.....
13222	Washing-machine.....	Wright Lancaster.....	Near Fairfield, Ind.....
13272	Washing-machines.....	Samuel M. Yost.....	Connersville, Ind.....
13344	Washing-machines.....	John H. Atwater.....	Kalamazoo, Mich.....
13356	Washing-machines.....	Joece Johnson.....	Washington, D. C.....
13635	Washing-machines.....	John A. Billa.....	Troy, N. Y.....
13652	Wash-boards.....	Joseph Keech.....	Waterloo, New York.....
13692	Washing-machines.....	Charles Love.....	Perru, Ill.....
13751	Washing-machine.....	Daniel Haldeman.....	Morgantown, Va.....
12340	Window-washer.....	George A. Meacham.....	New York, N. Y.....
13452	Window-shades.....	John J. Crooke.....	New York, N. Y.....
13684	Wringers for clothes.....	John McLaughlin.....	Steubenville, Ohio.....

CLASS XVIII.—ARTS POLITE, FINE, AND ORNAMENTAL, including music, painting, sculpture, engraving, books, paper, printing, binding, jewelry, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13044	Accordeons, method of tuning .....	E. A. Robbins .....	Rochester, N. Y. ....	June 12, 1855.
1279	Book-brace .....	William Ives .....	Buffalo, N. Y. ....	Jan. 23, 1855.
12954	Books, paging, apparatus for .....	Gabriel Leverich .....	Wellington, N. Y. ....	May 29, 1855.
13199	Book clasp .....	Charles Folsom .....	Cambridge, Mass. ....	July 3, 1855.
13302	Books: paging-machine .....	F. O. Degener .....	New York, N. Y. ....	July 24, 1855.
13477	Books, &c., machine for paging .....	W. C. Demain, assignor to A. B. Ely .....	Boston, Mass. ....	Aug. 21, 1855.
13501	Books, machine for trimming .....	M. Riehl .....	Boston, Mass. ....	Aug. 28, 1855.
12477	Breadstuffs, &c., safe-catch for .....	E. C. Benyard .....	Philadelphia, Pa. ....	Mar. 6, 1855.
12700	Cameras, plate-holder for .....	A. S. Southworth .....	Boston, Mass. ....	April 10, 1855.
12344	Daguerreotype-plate holder .....	David N. B. Coffin, jr. ....	Lynn, Mass. ....	Feb. 6, 1855.
12560	Daguerreotype plates, machine for polishing .....	David Shive .....	Philadelphia, Pa. ....	Mar. 20, 1855.
13196	Daguerreotype face-plates or mats, machine for bevelling and polishing the inner edges of .....	Edward Brown, assignor to Scoville Manufacturing Company. ....	Waterbury, Conn. ....	July 3, 1855.
13410	Daguerreotype cases, manufacture of. . . {	H. Halverson, assignor to .....	Cambridge, Mass. ....	Aug. 7, 1855.
13665	Daguerreotype-plate holder .....	Horace Barnes .....	Boston, Mass. ....	} Oct. 9, 1855. Oct. 23, 1855. Sept. 4, 1855. Sept. 4, 1855.
13701	Daguerreotype-plate vise .....	David Shive .....	Philadelphia, Pa. ....	
13516	Electrotyping, machine for .....	Samuel S. Day .....	New York, N. Y. ....	
13521	Electrotype shells, mould for backing .....	Joseph Alexander Adams .....	Brooklyn, N. Y. ....	
	Envelopes. (See Paper.) .....	Aaron D. Farmer and Ransom Rathbone. ....	Brooklyn, N. Y. ....	
	Envelopes, &c., machine for making. (See Paper.) .....			
12941	Gridirons, gas-burning. (See Class V.) .....	Henry Whitney, jr. ....	Cambridge, Mass. ....	May 8, 1855.
13575	Inkstands .....	A. Bingham, assignor to Bingham & Bailey .....	Boston, Mass. ....	Aug. 28, 1855.
13902	Inkstands, fountain .....	Charles T. Close .....	New York, N. Y. ....	Dec. 11, 1855.
	Jewellers' scraps, processes for refining .....			

Medallion, stereoscopic. (See Stereos- copes.)				
Melodeons				
Melodeons, &c., improved swell for				
Melodeon				
Melodeons and organs, coupling for				
Melodeons				
Melodeons, organ				
Musical instruments, wind, valve for				
Musico-books, &c., apparatus for turning the leaves of				
Music, method of composing				
Musical reed-instruments				
Music, (organ-pipes, wind-regulator for)				
Music, producing, by steam or condensed air				
Music, registering, machine for				
Organ melodeons. (See Melodeons.)				
Organs and melodeons, coupling for. (See Melodeons)				
Paging-machine. (See Books.)				
Paper, boxes of, machine for making				
Paper-bags and envelopes, machine for { making.				
Paper-ruling machine				
Paper-bags, machine for making				
Paper-bags, machine for making				
Paper, machine for ruling and paging.. {				
Paper, (machine for making envelopes)				
Paper, (envelopes)				
Pen, fountain				
Pen, fountain				
Pen-holder				
Pen, fountain				
Pens, fountain				
Pencil-sharpeners, moulds for casting				
Penmanship, method of teaching				
129713	Jeremiah Carhart	New York, N. Y.	April 17, 1855.	
129938	Thomas F. Thornton, assignor to Prince & Stephenson.	Buffalo, N. Y.	May 29, 1856.	
13921	William C. Whipple and Wm. C. Bowe.	Westville, Conn.	June 5, 1855.	
13048	Henry W. Smith	Boston, Mass.	June 12, 1855.	
13714	George G. Hunt	Wolcottville, Conn.	Oct. 23, 1855.	
13959	Thomas F. Thornton	Buffalo, N. Y.	Dec. 18, 1855.	
12628	Gustavus Hammer	Cincinnati, Ohio.	April 3, 1855.	
12724	Isaac Gallup	Mystic Bridge, Conn.	April 17, 1855.	
13001	William Fischer	Philadelphia, Pa.	June 5, 1855.	
13365	Geo. S. Shepard	Canaan, N. H.	July 31, 1855.	
13642	Daniel George	Nazareth, Pa.	Oct. 9, 1855.	
13668	J. C. Stoddard	Worcester, Mass.	Oct. 9, 1855.	
13946	H. B. Horton	Akron, Ohio.	Dec. 18, 1855.	
12255	R. L. Hawes	Worcester, Mass.	Jan. 16, 1855.	
12786	J. A. Smith and S. E. Pettes.	Clinton, Mass.	May 1, 1855.	
12936	T. J. Baldwin	Foxborough, Mass.		
12945	E. W. Goodale	Bridgeport, Conn.	April 17, 1855.	
12992	Francis Wolfe	Clinton, Mass.	May 29, 1855.	
13319	Jno. A. Elder and Jno. Richardson	Bethlehem, Pa.	May 29, 1855.	
13647	E. W. Goodale	Westbrook, Maine.	July 31, 1855.	
13838	Emanuel Harmon	Portland, Maine.		
12301	Newell A. Prince	Clinton, Mass.	Oct. 9, 1855.	
12727	Hugh K. McClelland	Washington, D. C.	Nov. 20, 1855.	
12734	William H. Towers	Brooklyn, N. Y.	Jan. 23, 1855.	
13534	George W. White	Eldersville, Pa.	April 17, 1855.	
13995	Newell A. Prince	Philadelphia, Pa.	April 17, 1855.	
12722	Walter K. Foster	East Chester, N. Y.	Sept. 4, 1855.	
12391	William S. MacLaurin	Brooklyn, N. Y.	Dec. 25, 1855.	
		Bangor, Me.	April 17, 1855.	
		New York, N. Y.	Feb. 13, 1855.	



*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13885	Photographic bath.....	Isaac Rehn.....	Philadelphia, Pa.....	Dec. 4, 1855.
12188	Piano frames, brace for.....	Dwight Gibbons, assignor to Frederick Starr.....	Rochester, N. Y.....	Jan. 2, 1855.
12315	Piano-fortes.....	Alexander Hall.....	Lloydsville, Ohio.....	Jan. 30, 1855.
12382	Piano-fortes, sounding-board for.....	James A. Gray.....	Albany, N. Y.....	Feb. 6, 1855.
12432	Piano-forte frames.....	Henry S. Achterly.....	New York, N. Y.....	Feb. 27, 1855.
12737	Piano-forte action.....	Stephen P. Brooks.....	Boston, Mass.....	April 17, 1855.
12763	Piano-forte action.....	William Munroe.....	Boston, Mass.....	April 24, 1855.
13091	Piano-forte action.....	Robert M. Kerrison.....	Philadelphia, Pa.....	June 19, 1855.
13236	Pianos, tables, &c., machine for cutting legs for.....	Andrew Stoeckel.....	New York, N. Y.....	July 10, 1855.
13824	Piano-forte action.....	Francis Taylor.....	New York, N. Y.....	Dec. 11, 1855.
13942	Piano-fortes.....	S. B. Driggs.....	Detroit, Mich.....	Dec. 18, 1855; English patent dated Nov. 1, 1855.
13956	Piano-forte action.....	John S. Morton.....	New York, N. Y.....	Sept. 18, 1855.
13960	Piano-fortes.....	H. Schonacker.....	Detroit, Mich.....	Dec. 18, 1855.
13014	Portfolio.....	S. J. H. Smith.....	Boston, Mass.....	June 5, 1855.
12118	Printing-presses and ruling-machines, apparatus for feeding paper to.....	David Baldwin.....	Godwinville, N. J.....	Jan. 2, 1855.
12178	Press for printing different colors.....	Stephen Brown.....	Syracuse, N. Y.....	Jan. 2, 1855.
12183	Printing-press.....	Sidney Kelsey.....	Erle, Pa.....	Jan. 2, 1855.
12185	Printing-press.....	James Lewis.....	Prattsville, N. Y.....	Jan. 2, 1855.
12213	Printing machine for, from engraved plates.....	Robert Neale.....	Clermont county, Ohio.....	Jan. 9, 1855; English patent dated Jan. 18, 1853.
12401	Printing-presses, machine for feeding paper to.....	A. B. Childs and H. W. Dickinson.....	Rochester, N. Y.....	Feb. 20, 1855.
12553	Press for printing, hand.....	Charles Keniston.....	Boston, Mass.....	Mar. 20, 1855.
12568	Printing-press.....	Lemuel T. Wells.....	Cincinnati, Ohio.....	Mar. 20, 1855.
12634	Printing-presses, hand, apparatus for feeding paper to.....	E. Mathers and W. D. Siegfried.....	Morgantown, Va.....	April 3, 1855.
12702	Printing-presses, apparatus for feeding paper to.....	John B. Hall.....	New York, N. Y.....	April 10, 1865.

19733	Printers' ink, making.....	Caleb A. Thompson.....	Adrian, Mich.....	April 17, 1855.
19761	Printing-presses, machine for feeding paper to.....	J. B. Livingston and Miles Waterhouse.....	Barnet, Vt.....	April 24, 1855.
12989	Printing oil-cloths, registering blocks for.....	James Albro.....	Elizabethtown, N. J.....	June 5, 1855.
13069	Printing-presses.....	Joel G. Northrup, assignor to James D. Mather.....	Syracuse, N. Y.....	June 12, 1855.
13183	Printing-presses, machine for feeding sheets of paper to.....	A. H. Rowand.....	Alleghany City, Pa.....	July 3, 1855.
13197	Printers' rules, machine for mitering.....	Wm. McDonald, assignor to R. Hoe & Co.....	New York, N. Y.....	July 3, 1855.
13333	Printing-press.....	Andrew Campbell.....	Newark, N. J.....	July 24, 1855.
13335	Printing-press.....	Merwin Davis.....	New York, N. Y.....	July 24, 1855.
13376	Printing textile fabrics, machine for.....	Jas. Melville and Jos. Burch.....	Chester county, England.....	Aug. 7, 1855.
13423	Printing, hand-press for.....	Dexter H. Chamberlain.....	West Roxbury, Mass.....	Aug. 14, 1855.
13462	Printers, calico, rollers, machine for engraving.....	Jno. and Thomas Hope.....	Providence, R. I.....	Aug. 21, 1855.
13576	Printing-press, card.....	Daniel K. Winder.....	Cincinnati, Ohio.....	Sept. 18, 1855.
13579	Press, seal and stamping.....	Edmund Morris.....	Trenton, N. J.....	Sept. 18, 1855.
13587	Printers, metallic plates for, preparation of.....	Samuel W. Lowe, assignor to himself and Jacob M. Beck.....	Philadelphia, Pa.....	Sept. 18, 1855.
13691	Printing-press, card.....	Daniel K. Winder.....	Cincinnati, Ohio.....	Oct. 9, 1855.
13689	Printing-presses, card, inking apparatus for.....	Daniel K. Winder.....	Cincinnati, Ohio.....	Oct. 16, 1855.
13703	Printing-press, card.....	Thomas Harsha.....	West Union, Ohio.....	Oct. 23, 1855.
13737	Printing-presses, machine for feeding paper to.....	Hy. W. Dickinson, assignor to L. B. Swan.....	Rochester, N. Y.....	Oct. 30, 1855.
13818	Printing yarns and cloths, machine for.....	Thomas Henderson.....	Lowell, Mass.....	Nov. 20, 1855.
13857	Printing-press.....	C. A. Sweet.....	Lowell, Mass.....	Nov. 27, 1855.
13915	Printing calico, processes for.....	A. Lovis and E. Prince.....	Boston, Mass.....	Dec. 11, 1855.
12468	Stamp, hand.....	Daniel W. Messer, assignor to D. W. Messer, R. B. Fite, and A. James.....	Boston, Mass.....	Feb. 27, 1855.
13308	Stamp, hand.....	J. and E. Harris.....	Boston, Mass.....	July 24, 1855.
13495	Stamp, hand.....	Horace Holt.....	Winchester, Mass.....	Aug. 28, 1855.
13740	Stamp, hand.....	Stephen P. Ruggles.....	Boston, Mass.....	Aug. 21, 1855.
12157	Stereotyping, apparatus for.....	Willard Cowles.....	Washington, D. C.....	Jan. 2, 1855.
12257	Stereoscopic medallion.....	John F. Mascher.....	Philadelphia, Pa.....	Jan. 16, 1855.
12451	Stereoscope case.....	John Stull.....	Philadelphia, Pa.....	Feb. 27, 1855.
13093	Stereoscopic photographs, apparatus for taking.....	Joseph H. Marston.....	Philadelphia, Pa.....	June 19, 1855.

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13106	Stereoscopic pictures, apparatus for moving.	A. S. Southworth and J. J. Hawes.....	Boston, Mass.....	June 19, 1855.
13609	Types, printers', machine for making....	Samuel S. Weed.....	Stoneham, Mass.....	Sept. 25, 1855.
13710	Types, composing and setting, machine for.	Wm. S. Loughborough.....	Rochester, N. Y.....	Oct. 23, 1855.
13935	Types, rubbing, machine for.....	Daniel Moore, assignor to himself, Geo. S. Cameron, and Jas. H. McWilliams.	Brooklyn, N. Y.....	Dec. 11, 1855.
13978	Violins, machine for cutting the fronts and backs of.	Mathias Keller.....	Philadelphia, Pa.....	Dec. 4, 1855.
12502	Watch-makers' lathes, polishing apparatus for.	James M. Bottum.....	New York, N. Y.....	Mar. 13, 1855.
12538	Watch-chains, swivel for.....	Elihu Bliss.....	Newark, N. J.....	Mar. 20, 1855.

*CLASS XIX.—FIRE-ARMS AND IMPLEMENTS OF WAR, and parts thereof, including the manufacture of shot and gunpowder.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12411	Bomb-shells, fuze-stock for. (See Fuze.)	John S. Keith and John Brooks.....	Canton, Mass.....	Feb. 20, 1855.
12774	Bullet-mould.....	William Ashton.....	Middletown, Conn.....	May 1, 1855.
12295	Cannon, repeating.....	Samuel Huffman, assignor to S. Huffman and D. O. Hare.	Charlestown, Ill.....	Jan. 23, 1855.
12629	Cannon, rifled, mode of loading.....	Luther Houghton.....	Philadelphia, Pa.....	April 3, 1855.
13851	Cannon.....	Alfred Krupp.....	Essen, Prussia.....	Nov. 27, 1855; French patent dated Dec. 16, 1847.
13927	Cannon, manufacture of.....	Daniel Treadwell.....	Citizen of the United States residing in London, England.	Dec. 11, 1855.
13984	Cannon, wrought iron, manufacture of...	John Griffen.....	Safe Harbor, Pa.....	Dec. 25, 1855.

12545	Cartridges, shot.....	Abbot R. Davis.....	East Cambridge, Mass.....	Mar. 20, 1855.
12553	Cartridges.....	Abner N. Newton.....	Richmond, Ind.....	Mar. 20, 1855.
12942	Cartridges.....	Charles F. Brown.....	Warren, R. I.....	May 20, 1855.
12189	Fire-arms, repeating.....	Joshua Stevens, assignor to Massachusetts Arm Co.....	Chicopee Falls, Mass.....	Jan. 2, 1855.
12230	Fire-arms.....	Thomas H. Barlow.....	Lexington, Ky.....	Jan. 16, 1855.
12235	Fire-arms.....	Edmund H. Graham.....	Biddeford, Me.....	Jan. 16, 1855.
12241	Fire-arms.....	Alonzo D. Perry.....	Newark, N. J.....	Jan. 16, 1855; English patent dated Oct. 8, 1853.
12394	Fire-arms, repeating, apparatus for cooling.....	John A. Reynolds.....	Elmira, N. Y.....	July 17, 1855.
12328	Fire-arms, portable.....	A. O. H. P. Schorn.....	Murfreesboro', Tenn.....	Jan. 30, 1855.
12470	Fire-arms.....	John Hollingsworth and Ralph S. Mer-shon.....	Zanesville, Ohio.....	Feb. 27, 1855; English patent dated Aug. 1, 1854.
12471	Fire-arms, repeating.....	John Hollingsworth & Ralph S. Mer-shon.....	Zanesville, Ohio.....	Feb. 27, 1855; English patent dated Aug. 1, 1854.
12528	Fire-arms, breech-loading.....	Rollin White.....	Hartford, Conn.....	Mar. 13, 1855.
12539	Fire-arms, breech-loading.....	Rollin White.....	Hartford, Conn.....	Mar. 13, 1855.
12555	Fire-arms.....	Frederick Newbury.....	Albany, N. Y.....	Mar. 20, 1855.
12567	Fire-arms, breech-loading.....	Alexander T. Watson.....	Castleton, N. Y.....	Mar. 20, 1855.
12638	Fire-arms, breech-loading.....	Rollin White.....	Hartford, Conn.....	April 3, 1855.
12648	Fire-arms, repeating.....	Rollin White.....	Hartford, Conn.....	April 3, 1855.
12649	Fire-arms, repeating.....	Rollin White.....	Hartford, Conn.....	April 3, 1855.
12655	Fire-arms, breech-loading.....	George H. Soule.....	Jersey City, N. J.....	April 3, 1855.
12681	Fire-arms.....	Ferdinand Klein.....	Newark, N. J.....	April 10, 1855.
12836	Fire-arms.....	John Stowell.....	Charlestown, Mass.....	May 8, 1855.
12906	Fire-arms.....	Henry Gross.....	Tiffin, Ohio.....	May 22, 1855.
13039	Fire-arms, revolving.....	Frederick Newbury.....	Albany, N. Y.....	June 12, 1855.
13154	Fire-arms.....	Ethan Allen.....	Worcester, Mass.....	July 3, 1855.
13292	Fire-arms.....	John A. Reynolds.....	Elmira, N. Y.....	July 17, 1855.
13293	Fire-arms.....	John A. Reynolds.....	Elmira, N. Y.....	July 17, 1855.
13474	Fire-arms, magazine, breech-loading.....	John Synney and James Dandridge.....	Charlestown, Mass.....	Aug. 21, 1855.
13507	Fire-arms, breech-loading.....	B. F. Joelyn.....	Boston, Mass.....	Aug. 28, 1855.
13547	Fire-arms, charger for.....	Joece Johnson.....	Worcester, Mass.....	Sept. 11, 1855.
13581	Fire-arms.....	William W. Marston.....	Washington, D. C.....	Sept. 18, 1855.
13582	Fire-arms, revolving.....	F. Newbury.....	New York, N. Y.....	Sept. 18, 1855.
13592	Fire-arms.....	F. Beerstecher.....	Albany, N. Y.....	Sept. 18, 1855.
13691	Fire-arms, breech-loading.....	H. B. Weaver.....	Philadelphia, Pa.....	Sept. 28, 1855.
			South Windham, Conn.....	Oct. 16, 1855.

## Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13706	Fire-arms, repeating, single-barrelled....	Daniel B. Neal.....	Mount Gilead, Ohio.....	Feb. 27, 1855.
13941	Fire-arms.....	Joseph C. Day.....	Hackettstown, N. J.....	Dec. 18, 1855.
13999	Fire-arms, revolving.....	E. K. Root.....	Hartford, Conn.....	Dec. 25, 1855.
14001	Fire-arms, breech-loading.....	Gilbert Smith.....	Butter Milk Falls, N. Y.....	Dec. 25, 1855.
12810	Fuze, tape.....	Philip Bacon.....	Simsbury, Conn.....	May 8, 1855.
13133	Fuze-stock for bomb-shells.....	A. Powell, jr.....	Mare Island, Cal.....	June 26, 1855.
12124	Locks for fire-arms.....	J. S. Butterfield.....	Philadelphia, Pa.....	Jan. 2, 1855.
13442	Locks, gun.....	Michael Tromly.....	Mount Vernon, Ill.....	Aug. 14, 1855.
13825	Locks, gun.....	John Phin.....	Rochester, N. Y.....	Nov. 20, 1855.
12592	Ordnance.....	Christopher Wolter.....	Bridgeport, Conn.....	Mar. 13, 1855.
13249	Ordnance, mode of mounting.....	Chas. F. Brown.....	Warren, R. I.....	July 17, 1855.
13678	Ordnance, projectiles for.....	Andrew Hotchkiss.....	Sharon, Conn.....	Oct. 16, 1855.
12253	Projectiles, moulds for casting.....	Hezekiah Conant.....	Hartford, Conn.....	Jan. 16, 1855.
12574	Press for making cylindro-conical hollow projectiles by pressure.	W. M. B. Hartley.....	New York, N. Y.....	Mar. 20, 1855.
12795	Projectile for fire-arms.....	Eben Hoyt, jr.....	Chelsea, Mass.....	May 1, 1855.
12801	Projectiles.....	W. J. Von Kammerhueber.....	Washington, D. C.....	May 1, 1855.
13469	Projectiles, percussion.....	Augustus McBurnh.....	Elizabeth, N. J.....	Aug. 21, 1855.
13799	Projectile, compound.....	S. Sawyer.....	Fitchburg, Mass.....	Nov. 13, 1855.
12285	Rifling-machine, compound.....	E. K. Root.....	Hartford, Conn.....	Jan. 23, 1855.

## CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, including trusses, dental instruments, bathing apparatus, &amp;c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13467	Bath, warm, apparatus.....	Louis M. Lefebvre, M. D.....	New Orleans, La.....	Aug. 21, 1855.
13974	Bath, vapor, pipes of a.....	Joe. Buhler, M. D.....	New York, N. Y.....	Dec. 25, 1855.
13972	Chairs for dentists' use.....	Richard A. Stratton.....	Philadelphia, Pa.....	May 29, 1855.

13398	Chairs, dental .....	D. W. Perkins.....	Rome, N. Y. ....	Aug. 7, 1855.
12951	Ear-trumpets, construction of.....	Edw. G. Hyde .....	Camptown, N. J. ....	May 29, 1855.
13353	Eye, instruments for modifying focal length of the.....	Daniel Parish.....	New York, N. Y. ....	Dec. 18, 1855.
12636	Lancets.....	Henry Mellich.....	Walpole, N. H. ....	April 3, 1855.
13380	Legs, artificial.....	William H. Rhodes .....	Berlin, N. Y. ....	July 31, 1855.
13404	Legs, artificial.....	Addison Spaulding.....	Lowell, Mass. ....	Aug. 7, 1855.
13611	Legs, artificial.....	John Taggart, assignor to himself and Theodore D. Parker.....	Roxbury, Mass. ....	Sept. 25, 1855.
13318	Medicines, pulverulent, apparatus for administering.....	Jonas Moore and D. P. Adams.....	Marietta, Ohio .....	July 24, 1855.
13453	Obstetrical extractor.....	A. C. Buffum.....	Chicago, Ill. ....	Aug. 21, 1855.
12980	Pill-making machines.....	Erasmus A. Pond .....	Rutland, Vt. ....	May 29, 1855.
13975	Syringes, injecting, construction of.....	Jos. Buhler.....	New York, N. Y. ....	Dec. 25, 1855.
12156	Teeth .....	Sharpless Clayton .....	Worcester, Pa. ....	Jan. 2, 1855.
13801	Teeth, artificial, preparing.....	Barclay A. Satterthwaite.....	Lima, Ohio.....	Nov. 13, 1855.
12966	Trusses, hernial.....	William M. Bonwill, M. D. ....	Camden, Del. ....	Jan. 23, 1855.
12986	Trusses, hernial, pads for .....	Lucian E. Hicks, assignor to L. E. Hicks and H. L. Hall.....	Boston, Mass. ....	May 29, 1855.
13430	Trusses, hernial.....	E. B. Graham .....	Middletown, N. Y. ....	Aug. 14, 1855.
13548	Trusses, hernial.....	F. G. Mitchell.....	New York, N. Y. ....	Sept. 11, 1855.
12965	Uterine supporters.....	Henry A. Rosenthal .....	New York, N. Y. ....	May 29, 1855.

CLASS XXI.—WEARING APPAREL, ARTICLES FOR THE TOILET, &c., including instruments for manufacturing.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13002	Boots.	Franklin J. French.....	Whittingham, Vt. ....	June 5, 1855.
12726	Button, stud and, fastening.....	Samuel H. Hopkins, assignor to William C. Greene, John T. Mauran, and Chas. Jackson.....	Providence, R. I. ....	April 17, 1855.
13296	Cloaks, cutting .....	A. S. Thompson .....	Albion, Pa. ....	Dec. 11, 1855.
12379	Dress, stays for articles of .....	John Dick .....	New York, N. Y. ....	Feb. 13, 1855.
13011	Garments, braces for supporting.....	Daniel Minthorn .....	New York, N. Y. ....	June 5, 1855.
12173	Hats .....	W. F. Warburton .....	Philadelphia, Pa. ....	Jan. 2, 1855.

*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
13361	Hats, ventilating.....	William Sellers.....	New York, N. Y.....	July 31, 1855.
12313	Shirts, yoke of.....	Hezekiah Griswold.....	Hartford, Conn.....	Jan. 30, 1855.
12899	Shirts, wristbands of.....	Rufus R. Chandler.....	Richmond, Va.....	May 22, 1855
13213	Sun-shade.....	S. N. Campbell.....	Elgin, Ill.....	July 10, 1855.
13850	Umbrella sticks, &c., of rattan, preparation of.....	Joseph Kleemann.....	City of Meissen, Germany.....	Nov. 27, 1855.
12903	Umbrellas.....	Wright Duryea.....	New York, N. Y.....	May 22, 1855.

*CLASS XXII.—Miscellaneous.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
12433	Annunciators, hotel.....	John Bale.....	Buffalo, N. Y.....	Feb. 27, 1855.
13600	Awning for horse and dray.....	Jacob Nelson.....	Cincinnati, Ohio.....	Sept. 26, 1855.
12222	Beet-prepper.....	Frederick Tebb.....	Johnstown, Pa.....	Jan. 9, 1855.
13039	Balls, mode of hanging.....	George W. Hildreth.....	Lockport, N. Y.....	June 19, 1855.
12604	Bill-holder.....	George W. Palmer.....	Boston, Mass.....	Mar. 27, 1855.
12202	Bottles, devices for stoppers of.....	James Hanley.....	New York, N. Y.....	Jan. 9, 1855.
12501	Bottle-stopper fastenings.....	Theophilus A. Ashburner.....	Philadelphia, Pa.....	Mar. 13, 1855.
13266	Bottle-fastenings.....	Jules Jeannotat.....	Paterson, N. J.....	July 17, 1855.
13338	Bottle-fastenings.....	John Allender.....	New London, Conn.....	July 24, 1855.
13402	Bottles, glass, and similar articles, forming screw-threads, &c., in the necks of.....	Amasa Stone.....	Philadelphia, Pa.....	Aug. 7, 1855.
13659	Bottle-fastenings, register.....	John Smylie, jr.....	Philadelphia, Pa.....	Oct. 9, 1855.
13782	Bottle-fastenings, ring and gudgeons for.....	Joseph C. Day.....	Hackettstown, N. J.....	Nov. 13, 1855.
12356	Boxes, cylindrical.....	Elihu Waters.....	Troy, N. Y.....	Jan. 30, 1855.
12511	Boxes, paper, machine for making.....	Louis Koch.....	New York, N. Y.....	Mar. 13, 1855.
12177	Burglars' alarm.....	Daniel Wells.....	Philadelphia, Pa.....	Jan. 9, 1855.

13651	Burglars' alarm.....	Daniel Haldeman.....	Morgantown, Va.....	Feb. 6, 1855.
13157	Burglars' alarm.....	Edwain Brown.....	Lowell, Mass.....	July 3, 1855.
13478	Burglars' alarm.....	Albert Bingham, assignor to himself and A. J. Bailey.....	Boston, Mass.....	Aug. 31, 1855.
13738	Burglars' alarm.....	D. E. Eaton, assignor to D. E. and P. O. Eaton.....	Boston, Mass.....	Oct. 30, 1855.
13874	Burglars' alarm.....	Samuel Hamilton, Jr.....	Tolland, Mass.....	Dec. 4, 1855.
13876	Burglars' alarm.....	H. L. Hervey.....	Quincy, Ill.....	Dec. 4, 1855.
13874	Cans, preserve, devices for sealing. (See Class XVII.)			
13874	Card-exhibitor.....	Wright, Duryea.....	New York, N. Y.....	April 10, 1855.
13599	Chalking lines, method of.....	Samuel B. Knight.....	North Providence, R. I.....	Mar. 27, 1855.
13605	Coffins.....	David Sholl.....	Cincinnati, Ohio.....	Mar. 27, 1855.
13497	Cork-machine. (See Class XIV.)			
13371	Decks, arrangement of, in school-rooms..	Virgil Woodcock.....	Swansey, N. H.....	Mar. 6, 1855.
13414	Decks, writing.....	William G. Wolf.....	Philadelphia, Pa.....	July 31, 1855.
13643	Egg-holder.....	Francis Arnold.....	Haddam, Conn.....	Aug. 14, 1855.
13643	Fire-escape ladder.....	Stephen R. Roscoe.....	Carle, N. Y.....	April 3, 1855.
13068	Fish, serpentine spinner to catch.....	Charles De Saxe, assignor to Thomas H. Bate.....	New York, N. Y.....	June 12, 1855.
13061	Fish-hook.....	Richard F. Cook.....	Troy, Ala.....	June 19, 1855.
13649	Fish-hook.....	Job Johnson.....	Brooklyn, N. Y.....	Oct. 9, 1855.
	Hats and bonnets, pressing. (See Class III.)			
13395	Hogs, machine for slaughtering.....	Jefferson Parker.....	Louisville, Ky.....	Feb. 13, 1855.
13817	Holders, ticket.....	E. P. Frausheit and H. E. Reboul.....	Routes d'Orleans, Montrouge, Empire of France.....	Nov. 20, 1855; French patent dated Feb. 2, 1856.
13748	Hoses, metallic.....	William H. Webb, Jr.....	Chelsea, Mass.....	April 17, 1855.
13409	Hooks and eyes to cards, machine for attaching.....	Jos. S. Dennis and Addison Capron, assignors to themselves and Henry M. Richards.....	Attleborough, Mass.....	Aug. 7, 1855.
13098	Ice-house.....	W. D. Parker.....	New York, N. Y.....	June 19, 1855.
13809	Ice from rivers, &c, machinery for raising.....	C. R. Wortendyke.....	New York, N. Y.....	Nov. 13, 1855.
13824	Indicators, railroad station.....	Charles A. McEvoy.....	Richmond, Va.....	Nov. 20, 1855.
	Ivory, bleaching, devices for. (See Class IV.)			
13759	Pencils, slate, manufacture of.....	Norman C. Harris.....	Poultney, Vt.....	April 24, 1855.
	Ratan, machines for sawing. (See Class XIV.)			



*Classified List of Patents issued—Continued.*

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14141	Ratans into strips, machine for splitting.	Sylvanus Sawyer.	Fitchburg, Mass.	Jan. 2, 1855.
13627	Ratans, &c., machine for preparing.	C. C. Reed, assignor to C. C. Reed and William S. Reinert.	Philadelphia, Pa.	Oct. 2, 1855.
13823	Rattles, policemen's.	Joseph McCord.	Philadelphia, Pa.	Nov. 20, 1855.
13913	Sand-paper making machine.	Gilbert D. Jones.	Jersey City, N. J.	Dec. 11, 1855.
13449	Sifting, apparatus for.	Edward L. Seymour, assignor to W. O. Bourne.	New York, N. Y.	Aug. 14, 1855.
12426	Skates.	N. C. Sanford.	Meriden, Conn.	Feb. 20, 1855.
12427	Skates.	N. C. Sanford.	Meriden, Conn.	Feb. 20, 1855.
12338	Spurs.	James S. Ewbank, assignor to Wm. Everdell, jr.	New York, N. Y.	Jan. 30, 1855.
13312	Stalls for horses.	John Jeune.	Bethany, N. Y.	July 24, 1855.
12926	Sticks, tapering, mandrel for cutting.	George Turner.	Edinborough, Pa.	May 22, 1855.
13709	Sittrups, open. (See Class XVI.)	Robert A. Smith.	Philadelphia, Pa.	Oct. 23, 1855.
13455	Sweeping gutters, &c., machine for.	Dugald Campbell.	New York, N. Y.	Aug. 21, 1855.
12832	Swimming glove.	M. M. and J. C. Rhodes.	Taunton, Mass.	May 8, 1855.
12417	Tacks, machine for leathering.	Joseph G. Goshen and Samuel M. Eby.	Shirleysburg, Pa.	Feb. 20, 1855.
12125	Tobacco, maize-leaf as a substitute for.	James Caffrey.	Paradise township, Pa.	Jan. 2, 1855.
12892	Trap for catching animals.	Lucius B. Bradley.	Watertown, Conn.	May 22, 1855.
13483	Traps for catching animals.	L. B. Bradley.	Watertown, Conn.	Aug. 28, 1855.
13853	Trunks, attaching castors to.	Leonard S. Maring.	Fall River, Mass.	Nov. 27, 1855.
12671	Votes in legislative bodies, machines for recording.	Thomas C. Connolly.	Washington, D. C.	April 10, 1855.
12886	Votes in legislative bodies, mode of indicating the numbers of the yea and nay balls in machines for taking.	Samuel Huffman, assignor to S. Huffman and C. D. Hay.	Charlestown, Ill.	May 15, 1855.

"EXTENSIONS" DURING THE YEAR 1855.

Inventions or discoveries.	Patentees.	Residence.	Date of extension.	Date of patent.
Bridges, iron truss, construction of..... Buildings, &c., machines for removing.....	Squire Whipple..... Emily C. Pullman, administratrix of Lewis Pullman.	Albany, N. Y..... Albion, N. Y.....	Mar. 28, 1855 Aug. 20, 1855	April 24, 1841. Aug. 21, 1841.
Dovetails, square-joint, machine for cutting. Drill, seed.....	William Perrin..... Moses & Samuel Pennoek..... C. W. Copeland.....	Lowell, Mass..... Kennet Square, Pa..... New York, N. Y.....	Mar. 19, 1855 Mar. 5, 1855 May 31, 1855	Mar. 24, 1841. Mar. 12, 1841. June 11, 1841.
Engines, arranging the low pressure or condensing steam, so as to adapt its parts to be used by vessels for ocean service. Engines, fire, mode of applying water to, so as to render their operation more effective.	F. Ransom and U. Wenman.....	New York, N. Y.....	Feb. 8, 1855	Feb. 13, 1841.
Gins for ginning cotton, manner of constructing.	Lewis G. Sturdevant.....	Delaware, Ohio.....	July 21, 1855	July 23, 1841.
Harbors and rivers, machinery for removing bars and other obstructions from, and for forming and cleaning out docks.	James M. Putnam, administrator of Jas. R. Putnam, deceased.	New Orleans, La.....	May 4, 1855	May 6, 1841.
Horse-power, endless chain.....	Alonzo & A. F. Wheeler, executors of W. E. Wheeler, deceased.	Albany, N. Y.....	June 30, 1855	July 8, 1841; reissued May 22, 1856.
Mill, saw, for resawing boards and other timber.	Pearson Crosby.....	Fredonia, N. Y.....	Oct. 30, 1855	Nov. 3, 1841; reissued Mar. 10, 1849.
Mill, saw, portable circular..... Pins, sticking, into papers, machine for....	George Page..... Samuel Slocum.....	Washington, D. C..... Smithfield, R. I.....	July 14, 1855 Sept. 22, 1855	July 16, 1841. Sept. 30, 1841.
Pipes or tubes of lead, tin, and other metallic substances, machinery for making. Pumps..... Railroad carriages, the manner of constructing, so as to ease the lateral motion of the bodies thereof.	Benjamin Tatham and..... George N. Tatham..... Jesse Reed..... Charles Davenport and Albert Bridges....	New York, N. Y..... Philadelphia, Pa..... Marblefield, Mass..... Formerly of Cambridgeport, Mass....	Sept. 24, 1855 April 14, 1855 May 2, 1855	Oct. 11, 1841. April 16, 1841. May 4, 1841.

*Extensions for 1855—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of extension.	Date of patent.
Screw-propeller, form of, for propelling vessels.	Ebenezer Beard.....	New Sharon, Maine.....	Mar. 26, 1855	April 10, 1841.
Screw-wrenches.	Loring Coes.....	Worcester, Mass.....	April 14, 1855	April 16, 1841.
Shingles, machines for riving and dressing.	William S. George.....	Baltimore, Md.....	May 16, 1855	May 29, 1841.
Valves, steam, of steam-engines, when the steam is cut off and allowed to act expansively, method of working the.	Robt. L. and Francis B. Stevens, assigns to Jas. A. Stevens.	Hoboken, N. J.....	Jan. 3, 1855	Jan. 25, 1841.
Wire heddles, manufacture of.....	Abraham Howe and S. S. Granniss.....	Morristown, N. Y.....	Oct. 10, 1855	Oct. 11, 1841.

*"DISCLAIMERS" ENTERED DURING THE YEAR 1855.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of disclaimer.
Beams and girders, iron.....	Anthony Pollak.....	Philadelphia, Pa.....	June 5, 1855.	Aug. 18, 1855.
Brakes, wagon.....	Jehial E. Blodgett.....	Hannibal, N. Y.....	Mar. 20, 1855.	June 8, 1855.
Engine, arranging the low pressure or condensing steam, so as to adapt its parts to be used by vessels for ocean service.	C. W. Copeland.....	New York, N. Y.....	June 11, 1841.	May 31, 1855.
Pumps.....	Jesse Reed.....	Marshallfield, Mass.....	April 16, 1841.	April 11, 1855.

**"ADDITIONAL IMPROVEMENTS" GRANTED DURING THE YEAR 1855.**

**COMMISSIONER OF PATENTS.**

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No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Improvements added.
130	Engine, locomotive, apparatus for heating feed-water to.	David Matthew	Philadelphia, Pa	July 17, 1855	Dec. 11, 1855.
126	Fire-arms	Frederick Newbury	Albany, N. Y.	Mar. 20, 1855	May 31, 1855.
122	Furnace of hot-water apparatus, mode of regulating the.	Thomas T. Tasker	Philadelphia, Pa	Dec. 5, 1854	May 8, 1855.
129	Gun-locks	J. S. Butterfield	Philadelphia, Pa	Jan. 2, 1855	Dec. 11, 1855.
119	Lubricator, steam.	Robert M. Wade.	Wadesville, Va.	June 6, 1854	Mar. 27, 1855.
120	Pen-holders	E. W. Hanson.	Philadelphia, Pa.	Dec. 6, 1853	April 10, 1855.
118	Planters, seed	J. Graham Macfarlane.	Perry county, Pa.	Mar. 14, 1854	Feb. 6, 1855.
127	Propellers.	William D. Jones, assignor to Henry Winfield.	Poughkeepsie, N. Y.	April 17, 1855	Aug. 21, 1855.
124	Quartz-crushing machines.	James Hamilton.	New York, N. Y.	Jan. 3, 1854	May 22, 1855.
121	Saddle-trees.	William E. Jones.	United States army.	June 13, 1854	April 17, 1855.
123	Sawing and planing clap-boards, machine for.	Ephraim Parker	Rock Island, Ill.	Dec. 20, 1853	May 15, 1855.
128	Ventilating and warming houses.	Henry Ruttan	Coburg, Canada	June 23, 1848; anted'd Dec 5, 1848; re-issued Aug. 14, 1855.	Nov. 6, 1855.
125	Wrenches, screw.	Lorenzo D. Gilman	Troy, N. Y.	Mar. 27, 1855	July 17, 1855.

## "REISSUES" DURING THE YEAR 1855.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of reissue.
Bands, endless, for grain-dryers.....	John Massey.....	New York, N. Y.....	April 17, 1849	Sept. 11, 1855.
Bathing-tubs.....	Jordan L. Mott.....	West Haven, N. Y.....	Sept. 27, 1853	Aug. 14, 1855.
Bedsteads, sofa.....	Charles F. Martine.....	Boston, Mass.....	June 6, 1854	Dec. 25, 1855.
Bleaching-apparatus.....	Charles T. Appleton.....	Roxbury, Mass.....	April 17, 1855	May 22, 1855.
			English patent dated Aug. 30, 1853.	
Buildings, &c., warming and ventilating....	Henry Ruttan.....	Coburg, Canada West.....	Dec. 5, 1848; antedated June 23, 1848	Aug. 14, 1855.
Caldron and furnace, mode of constructing a combined, for the use of agriculturists and others.	Jordan L. Mott.....	Mott Haven, N. Y.....	Dec. 1, 1840; extended Dec. 1, 1854	Feb. 6, 1855.
Candlesticks.....	Francis A. Rockwell, assignor to John W. Rockwell.	Ridgefield, Conn.....	Dec. 16, 1851	Feb. 27, 1855.
Coffins, metallic.....	Martin H. Crane, assignor to Crane, Breed, & Co.	Cincinnati, Ohio.....	Jan. 23, 1855	Mar. 13, 1855.
Flour, machine for separating from bran..	J. Frost and Jas. Monroe.....	Albion, Mich.....	Feb. 27, 1849	Mar. 13, 1855.
Gates, method of opening and closing.....	William G. Philips.....	Newport, Del.....	Mar. 7, 1854	Aug. 21, 1855.
Glass, construction of moulds for pressing.	Hiram Dillaway.....	Sandwich, Mass.....	Aug. 21, 1841	May 1, 1855.
Harvester-cutters, arrangements for controlling. (Division marked "C.")	John H. Manny.....	Rockford, Ill.....	Sept. 23, 1851	Jan. 2, 1855.
Harvester-frames, arrangement of joints for attaching trucks to. (Division marked "B.")	John H. Manny.....	Rockford, Ill.....	Sept. 23, 1851	Jan. 2, 1855.
Harvesters.....	John H. Manny.....	Rockford, Ill.....	Nov. 23, 1852; antedated Sept. 17, 1852	Jan. 2, 1855.
Harvesters, cutter-fingers of.....	John H. Manny.....	Rockford, Ill.....	Apr. 19, 1853; antedated Dec. 9, 1853	Jan. 2, 1855.

Harvesters, grain.....	{ Aaron Palmer and S. G. Williams.....	Brookport, N. Y.....	July 1, 1851	April 10, 1855.
Harvesters, grain and grass. (Division marked "A.")	John H. Manny.....	Janeville, Wis.....	Oct. 17, 1854; antedated	Mar. 6, 1855.
Harvesters, grain and grass. (Division marked "B.")	John H. Manny.....	Rockford, Ill.....	June 15, 1854	Mar. 6, 1855.
Harvesters, grain and grass. (Division marked "C.")	John H. Manny.....	Rockford, Ill.....	Oct. 17, 1854; antedated	Mar. 6, 1855.
Harvesters, grain and grass.....	Abner Whiteley.....	Springfield, Ohio.....	June 15, 1854	Mar. 6, 1855.
Harvesters having a leading truck. (Division marked "D.")	John H. Manny.....	Rockford, Ill.....	Sept. 19, 1854	April 3, 1855.
Harvesters: moving-machines. (Marked "A.")	John H. Manny.....	Rockford, Ill.....	Sept. 23, 1851	Jan. 2, 1855.
Harvesters, triangular frame, construction of. (Division marked "E.")	John H. Manny.....	Rockford, Ill.....	Sept. 23, 1851	Jan. 2, 1855.
Harvesting-machines.....	Jonathan Haynes.....	Pekin, Ill.....	Mar. 27, 1849	Nov. 6, 1855.
Hat-bodies, felting.....	William Fuzzard.....	Charlestown, Mass.....	Feb. 13, 1855	July 10, 1855.
Hinges.....	William Baker, assignor to Chas. Parker.	Meriden, Conn.....	April 13, 1852	Aug. 28, 1855.
Horse-power, endless chain.....	Alonzo and Alexander F. Wheeler, administrators of W. C. Wheeler, deceased.	Albany, N. Y.....	July 8, 1841	May 22, 1855.
Horse-power, endless chain.....	George Westinghouse.....	Central Bridge, N. Y.....	June 13, 1854	July 10, 1855.
Hot-water apparatus.....	John Brown.....	New York, N. Y.....	May 30, 1854	Aug. 14, 1855.
Lanterns.....	H. & J. Sangster.....	Buffalo, N. Y.....	June 10, 1851	Aug. 21, 1855.
Lanterns, fastening.....	Chas. Monnin and Wm. M. Booth.....	Buffalo, N. Y.....	Aug. 1, 1854	Jan. 30, 1855.
Loom for weaving figured fabrics.....	Richard Gareed.....	Frankford, Pa.....	Nov. 6, 1849	July 24, 1855.
Looms.....	B. H. Jenks.....	Bridenburg, Pa.....	April 3, 1855; antedated	June 5, 1855.
Metal bars, machinery for reducing.....	D. H. Chamberlain, assignor to C. G. Howard, assignor to Chas. Thompson, Jr., assignor to Peter Cooper.	New York, N. Y.....	Jan. 8, 1855	May 15, 1855.
Mills, portable grinding.....	Lyman Scott.....	Philadelphia, Pa.....	May 16, 1854	July 10, 1855.
Mortising-machines.....	James Guild.....	Cincinnati, Ohio.....	Nov. 30, 1853	Dec. 11, 1855.
Mowing-machines.....	Samuel Rockafellow.....	Covarrille, Pa.....	July 3, 1855	Dec. 11, 1855.
Nut and washer machine.....	Henry Carter and James Ross.....	Pittsburg, Pa.....	Aug. 26, 1851	June 19, 1855.

*Reissues during the year 1855—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of reissue.
Pins in paper, machine for sticking.....	Samuel Slocum.....	Providence, R. I.....	Sept. 13, 1841; extended	Dec. 4, 1855.
Planters, corn.....	Samuel Malone.....	Tremont, Ill.....	Sept. 30, 1855	July 10, 1855.
Ploughs.....	Cornelius R. Brinkerhoff.....	Batavia, N. Y.....	Jan. 3, 1854	Jan. 30, 1855.
Presses, cotton.....	C. J. Fay.....	North Lincoln, Me.....	Oct. 11, 1853	July 17, 1855.
Pumps.....	S. P. & William F. Dodge.....	Newbury, N. Y.....	Jan. 31, 1854	Sept. 25, 1855.
Sawing lumber.....	Pinney Young.....	Milwaukee, Wis.....	June 7, 1853	Oct. 2, 1855.
Shutters, rolling iron, hinge of.....	A. Livingston Johnson.....	Baltimore, Md.....	Jan. 30, 1855	April 24, 1855.
Spark-arresters.....	James Radley and John W. Hunter.....	New York, N. Y.....	June 25, 1850	Jan. 16, 1855.
Spark-arresters.....	William C. Grimes.....	Philadelphia, Pa.....	Jan. 22, 1850	Dec. 25, 1855.
Stoves, air-heating.....	J. M. Thatcher.....	Jersey City, N. J.....	Feb. 12, 1842	Sept. 11, 1855.
Tree-nails, machinery for dressing.....	Jesse Fitzgerald, assignor to J. Pierce, assignor to D. A. Fitzgerald.	New York, N. Y.....	Mar. 23, 1852	July 17, 1855.
Vault-covers.....	Thaddeus Hyatt.....	New York, N. Y.....	Aug. 28, 1849	April 3, 1855.
Winnowing machine.....	B. D. Sanders.....	Holiday's Cove, Va.....	Nov. 12, 1845 June 19, 1849	April 10, 1855.

## PATENTS FOR DESIGNS GRANTED DURING THE YEAR 1855.

Designs.	Patentees.	Residence.	Date of patent.
Birds, sewing.....	John North.....	Middletown, Mass.....	May 29, 1855.
Bottles and jars, labels on.....	W. A. Rogers.....	Decatur, Ala.....	Aug. 7, 1855.
Bottles, perfumery.....	Augustus E. Wetherell.....	Cincinnati, Ohio.....	Dec. 25, 1855.
Burial-cases.....	Marin H. Crane, assignor to Crane, Breed & Co.	Cincinnati, Ohio.....	Oct. 9, 1855.
Castors, table.....	Edward Gleason.....	Dorchester, Mass.....	Sept 11, 1855.

Clock-frames.....	J. C. Brown.....	Bristol, Conn.....	Dec. 11, 1855.
Clock-fronts.....	William B. Lorton.....	New York, N. Y.....	May 1, 1855.
Coffins, metallic.....	M. H. Crane, assignor to Crane, Breed, & Co.	Cincinnati, Ohio.....	Jan. 23, 1855.
Covers, steam-tube and hot-air.....	J. O. Morse and J. W. Adams.....	New York, N. Y.....	Nov. 27, 1855.
Daguerreotype and other mats, ornamenting.....	Hiram W. Hayden.....	Waterbury, Conn.....	Oct. 9, 1855.
Daguerreotype-cases.....	Henry A. Eichmeyer.....	Philadelphia, Pa.....	Feb. 27, 1855.
Fire-places, portable.....	Winlow Ames.....	Nashua, N. H.....	Aug. 28, 1855.
Fork and spoon handles.....	Henry Blagina, assignor to.....	Mount Vernon, N. Y.....	April 3, 1855.
Forks, table.....	Michael Ghiney.....	New York, N. Y.....	Mar. 20, 1855.
Franklin fire-place.....	Joseph W. Gardner.....	Shelburne Falls, Mass.....	July 31, 1855.
Grates, parlor.....	N. P. Richardson.....	Portland, Me.....	Sept. 11, 1855.
Hinges, strap.....	James Andrews, assignor to Andrews & Dixon	Philadelphia, Pa.....	Dec. 11, 1855.
Jugs, metallic covers for.....	E. Woolman.....	Danacoville, Ohio.....	Oct. 9, 1855.
Knives and forks.....	Orrin Newton.....	Pittsburg, Pa.....	Dec. 25, 1855.
Lanterns.....	Joseph W. Gardner, assignor to Lamson Good- now & Co.....	Shelburne Falls, Mass.....	Jan. 9, 1855.
Monuments, cast-iron.....	William D. Titus.....	Brooklyn, N. Y.....	Sept. 18, 1855.
Railings, iron.....	J. H. Wilson.....	Chesterfield, Ill.....	Aug. 21, 1855.
Spoons.....	Minard H. Fowler and Enoch Jacobs.....	Cincinnati, Ohio.....	April 10, 1855.
Spoons.....	John Gorham.....	Providence, R. I.....	July 3, 1855.
Statues, equestrian.....	Henry Hebbard and John Polhamus.....	New York, N. Y.....	May 15, 1855.
Stove.....	Clark Mills.....	Washington, D. C.....	Dec. 30, 1854.
Stove, parlor, plates.....	G. Smith, H. Brown, and J. Halzer, assignors to Abbott & Lawrence.....	Philadelphia, Pa.....	Oct. 16, 1855.
Stove-plates.....	James Wager.....	Troy, N. Y.....	June 26, 1855.
Stove-plates.....	Samuel W. Gibbs, assignor to S. Rinner & Brothers.....	Albany, N. Y.....	Oct. 30, 1855.
Stove-plates.....	Calvin Fulton, assignor to McClure, Bodell, and Barry.....	Rochester, N. Y.....	Aug. 14, 1855.
Stove-plates, ornamenting.....	Samuel W. Gibbs, assignor to.....	Albany, N. Y.....	Feb. 20, 1855.
Stoves.....	A. H. McArthur & Co.....	Hudson, N. Y.....	Feb. 27, 1855.
Stoves.....	S. W. Gibbs, assignor to.....	Philadelphia, Pa.....	Sept. 11, 1855.
Stoves.....	North Chase, & North.....	Cincinnati, Ohio.....	Oct. 30, 1855.
Stoves.....	John Hanfbauer and Henry Was.....	Peekskill, N. Y.....	Nov. 20, 1855.
Stoves.....	James H. Conklin, assignor to.....	Baltimore, Md.....	Aug. 28, 1855.
Stoves.....	S. B. Sexton.....	Portsmouth, Ohio.....	
Stoves.....	Andrew O'Neill, assignor to O'Neill & Hunter.....	Fall River, Mass.....	
Stoves and fireplaces.....	Benjamin Wardwell.....	Nashua, N. H.....	
	Winlow Ames.....		

antedated



## Designs—Continued.

Designs.	Patentees.	Residence.	Date of patent.
Stoves, box, six-plate.....	Conrad Harris and Paul W. Zoiner.....	Cincinnati, Ohio.....	Dec. 11, 1855.
Stoves, coal.....	Conrad Harris and Paul W. Zoiner.....	Cincinnati, Ohio.....	Jan. 23, 1855.
Stoves, coal.....	James Horton, assignor to Liebrandt, McDowell, & Co.	Philadelphia, Pa.....	Oct. 30, 1855.
Stoves, coal.....	G. Smith and H. Brown, assignors to Liebrandt, McDowell, & Co.	Philadelphia, Pa.....	Nov. 6, 1855.
Stoves, cooking.....	G. Smith, H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	Jan. 2, 1855; antedated
Stoves, cooking.....	S. W. Gibbs, assignor to.....	Albany, N. Y.....	Dec. 30, 1854.
Stoves, cooking.....	North, Chase, & North.....	Philadelphia, Pa.....	Feb. 20, 1855.
Stoves, cooking.....	Jacob Beasley and Edward J. Delany, assignors to Cresson, Stewart, & Peterson.	Philadelphia, Pa.....	Mar. 20, 1855.
Stoves, cooking.....	George Warren, S. H. Swetland, and E. C. Little.	Crescent, N. Y.....	May 1, 1855.
Stoves, cooking.....	B. Wardwell, E. E. Barstow, and G. C. Harkness.	Providence, R. I.....	May 8, 1855.
Stoves, cooking.....	A. J. Blanchard, assignor to Blanchard, Whittemore, & Co.	South Reading, Mass.....	May 29, 1855.
Stoves, cooking.....	Samuel D. Vose.....	Albany, N. Y.....	May 29, 1855; antedated
Stoves, cooking.....	Samuel D. Vose.....	Albany, N. Y.....	April 9, 1855.
Stoves, cooking.....	Samuel D. Vose.....	Albany, N. Y.....	May 29, 1855; antedated
Stoves, cooking.....	Russell Mann, assignor to.....	Troy, N. Y.....	April 9, 1855.
Stoves, cooking.....	George W. Eddy.....	Waterford, N. Y.....	May 29, 1855; antedated
Stoves, cooking.....	Apollon Richmond, assignor to A. C. Barstow & Co.	Providence, R. I.....	April 9, 1855.
Stoves, cooking.....	C. Harris and P. W. Zoiner, assignors to A. Bradley.	Pittsburg, Pa.....	July 3, 1855.
Stoves, cooking.....	R. Wheeler and S. A. Balley.....	Utica, N. Y.....	Aug. 14, 1855.
Stoves, cooking.....	William T. Coggerhall.....	Fall River, Mass.....	Aug. 28, 1855.
Stoves, cooking.....	James Wager.....	Troy, N. Y.....	Sept. 4, 1855.
Stoves, cooking.....			Oct. 16, 1855.

Stoves, cooking.....	James Wager.....	Troy, N. Y.....	Oct. 16, 1855.
Stoves, cooking.....	E. Ripley and N. S. Vedder, assignors to John- son, Cox, Lesley, & Co.....	Troy, N. Y.....	Oct. 30, 1855
Stoves, cooking.....	Conrad Harris and Paul W. Zoiser.....	Cincinnati, Ohio.....	Dec. 11, 1855.
Stoves, cooking, ovens for.....	G. W. Chambers, assignor to P. A. Palmer.....	Leroy, N. Y.....	Sept. 18, 1855.
Stoves for parlor.....	Wager, Richmond, & Smith.....	Troy, N. Y.....	Jan. 2, 1855.
Stoves, parlor.....	N. S. Vedder and E. Ripley, assignors to G. F. Filley.....	Troy, N. Y.....	Jan. 23, 1855.
Stoves, parlor.....	Samuel D. Vose.....	St. Louis, Mo.....	May 29, 1855; antedated April 9, 1855.
Stoves, parlor.....	A. P. Blanchard, assignor to Blanchard, Tar- bell, & Co.....	Albany, N. Y.....	May 29, 1855.
Stoves, parlor, cook.....	G. Smith, H. Brown, and James A. Reed, as- signors to J. G. Abbott and A. Lawrence.....	South Reading, Mass.....	Jan. 2, 1855; antedated
Stoves, parlor, open front.....	N. S. Vedder, assignor to.....	Philadelphia, Pa.....	Dec. 30, 1854.
Stoves, parlor, to burn coal.....	G. F. Filley.....	Troy, N. Y.....	Jan. 23, 1855.
Stoves, parlor, to burn wood.....	Conrad Harris and P. W. Zoiser.....	St. Louis, Mo.....	Dec. 11, 1855.
Stoves, ships' caboose.....	Conrad Harris and Paul W. Zoiser.....	Cincinnati, Ohio.....	Dec. 11, 1855.
Trade-marks.....	A. A. Lincoln, jr.....	Cincinnati, Ohio.....	Dec. 18, 1855.
Water-coolers.....	Thomas Lewis.....	Norton, Mass.....	Sept. 4, 1855.
	Smith, Brown, & Reed, assignors to Abbott & Lawrence.....	Malden, Mass.....	May 1, 1855.
Water-coolers.....	George Hodgetta.....	Philadelphia, Pa.....	May 29, 1855.
		New York, N. Y.....	



# DESCRIPTIONS AND CLAIMS OF PATENTS, ISSUED IN THE YEAR 1855.

ILLUSTRATED WITH ENGRAVINGS.

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## I.—AGRICULTURE.

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No. 13,672.—JOS. WELTON.—*Leading Clasp for Cattle*.—Patented October 9, 1855. (Plates, p. 1.)

The two balls A A are to enter the nostril of the animal, and are held shut by the slide B and spring C. A rope can be attached to ring D.

The inventor says, I do not claim the method of leading cattle, but I claim the combination of the spring and slide with the clasp, as set forth.

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No. 12,127.—EZEKIEL GORE.—*Improvement in Churns*.—Patented January 2, 1855. (Plates, p. 1.)

The sides of the churn are perforated, and through the holes pins D are introduced, flattened at their inner extremities, which may be turned by the hand from the exterior of the churn, so as to present a greater or less surface of resistance to the cream when put in motion by the dasher.

*Claim*.—I claim making the pins D with their inner ends flat, and so arranging them that they may be turned to the right or left as desired, and thus made to present a large or small resisting surface to the agitated cream, and facilitate or retard the production of butter, substantially as set forth.

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No. 12,366.—ISAIAH M. WILLIAMS.—*Improvement in Butter-Workers*.—Patented February 6, 1855. (Plates, p. 1.)

In working the stick *f* round, the buttermilk or water will sink to the bottom and escape at *d*, while the butter is pushed from the hole *d* by the action of the stick upon the bottom of the bowl *a*. Thus, as the inventor states, butter can be obtained with this machine perfectly clear of water or buttermilk.

*Claim.*—A hollow cone in combination with a conical roller work ng on its apex, constructed in the manner and for the purpose substantially as described.

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No. 12,370.—HAZEN WEBSTER.—*Improvement in Churns.*—Patented February 6, 1855. (Plates, p. 1.)

B is the spiral agitator, with the sides terminating at a point near the centre of the disk A, to which it is attached, and with a curve diverging towards the circumference of the disk. The air passes down through opening *a*, as the revolution of the agitator throws the cream towards the circumference of the tub, and thus produces a central passage for the air down to hole *a* and up through hole *b*.

The inventor says, I do not claim the device of a disk rotating at the bottom of the churn tub upon a vertical axis, nor do I claim the use of a tubular stem upon such a disk for admitting air beneath it, as these have been used before with the churn of S. P. Francisco, patented June 19, 1849; nor do I claim mounting an agitator upon such disk, as the same was proposed by said Francisco.

But I *claim*, in combination with such rotating disk, that form of the agitator which occupies the central portions of the disk, and sweeps towards the circumference in a spiral shape with rounded angles, and is surmounted towards the circumference with one or more vertical breakers; and this I claim, whether used with or without the air passages herein described

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No. 12,377.—EDWIN B. CLEMENT.—*Improvement in Churns.*—Patented February 13, 1855. (Plates, p. 1.)

The dasher consists of slats G, L, I, which are connected to bars E, which bars E are pivoted in C to arms B. Two of these arms B are pivoted (in K) to the frame of the churn, whereas the crank-axle passes through the square holes J in the other two arms B. A reciprocating motion of the crank O around its bearings in the churn frame will alternately compress the dasher into a diamond shape, and again extend it to the square shape represented in figure 2. Thus the cream will alternately be forced through the slats of the dasher by means of the successive folding together of the latter.

I *claim* the folding dasher, operating as set forth.

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No. 13,133.—ISAAC M. WADE.—*Improvement in Churns.*—Patented June 26, 1855. (Plates, p. 1.)

The cream by the rotation of the wings *e* is forced upward between the slats *f* and thrown against the brakes A<sup>1</sup>, which direct it to the aperture *g* in the disk H. The slats *f* in conjunction with the brakes A<sup>1</sup> prevent the cream from rotating. The cream, being forced upward between the slats, passes down through *g* with increased speed, owing to its gravity and suction caused by the aperture *g* being smaller than the spaces between the slats *f* and the edge of disk H.

*Claim.*—The construction and arrangement of the wings or beaters *e*, attached to the lower end of the shaft *D*, slats *f*, attached to the inner side of the case or tub *A*, and the brakes *A*<sup>1</sup> attached to the disk *H*, as shown and for the purpose as set forth.

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No. 13,291.—MOSES D. WELLS.—*Improvement in Churns.*—Patented July 17, 1855. (Plates, p. 1.)

The nature of this improvement will be understood from the claim and engraving.

*Claim.*—The construction of the dasher with an inclined continuous channel *e*, substantially as set forth, for producing the upward flow of a continuous hollow column of cream at each down stroke of the dasher, and thus favoring atmospheric action, as specified.

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No. 13,421.—JACOB BOYERS.—*Improvement in Churns.*—Patented August 14, 1855. (Plates, p. 1.)

The nature of this improvement consists in giving such a direction to the cream in the tub by the action of the agitator, that it shall assume the character of a screw, whereby (the inventor states) the butter is separated in a more solid condition, and gathered in a mass at one side of the churn. By placing the shaft obliquely, a vortex or whirlpool is created at *A*, while at the other side of the tub, at *B*, the butter is comparatively quiet and suffered to gather in lumps.

*Claim.*—The shaft *E*, in combination with the dashers *DD*, when arranged and combined in the manner and for the purpose substantially as set forth.

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No. 13,638.—JOHN G. DUNGAN.—*Improvement in Churns.*—Patented October 9, 1855. (Plates, p. 1.)

The pinion *p* is attached to the hub of the inner leaves *h*, and is revolved alternately in opposite directions by means of cog-gearing *F F*<sup>1</sup>. The head *n* of pinion *p* contains a spiral groove, which serves to work the arm *i* up and down, thereby elevating and depressing the rod *d* and spring-rods *f*. During the downward movement of the rod *d* and rods *f*, the outer leaves *g* will be turned on their fulcra *m* into the position represented in dotted lines.

*Claim.*—Giving the outer leaves of an alternately opposite rotating agitator a rocking motion to and from the sides of the churn, substantially as set forth.

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No. 13,686.—LEWIS P. PEASE.—*Improvement in Churns.*—Patented October 16, 1855. (Plates, p. 1.)

The curved surfaces *e* gather the cream, and by the reaction of the liquid against their surfaces are forced to revolve around their axes *c*, in addition to their primary rotation in a horizontal plane around the

shaft *b*. This rotation of each wing around its respective axle results in a constant breaking up of the principal vortex by the counter currents thus generated by the wings, and hence results a violent agitation of the cream.

*Claim.*—The winged dasher, formed by two series of curved paddles as described, rotating around axles, projecting outward and slightly upward from a vertical shaft, the said paddles of each series forming a conic frustrum, revolving with its lower edge parallel to the tub bottom.

No. 12,314.—JONATHAN HIBBS.—*Improvement in Clover Hullers.*—Patented January 30, 1855. (Plates, p. 2.)

Just over the cylinder A there is a semicircular metal jacket E, which is cut open in the middle so as to leave a triangular hole as shown in fig. 2. Two sides of this hole have a flange *a* projecting below and extending down to the surface of the cylinder and following its curve, leaving just room for the teeth to clear. This flange divides as it were the top space over the cylinder into three parts, the centre part or opening being the place where the clover-heads are fed in. As the chaff strikes the point where the two sides of the triangle meet, it is spread over towards the ends of the cylinder, which carries it round and passes it between the concave near its ends, when it is allowed to be discharged, while fresh material is being fed in at the centre.

*Claim.*—Combining with the concave shell two flanges diverging from a central point, and so acting as to divide the chaff from the fresh fed straw during the time that the former is passing a second time round the cylinder, substantially as described.

No. 12,372.—JAMES ALLEN.—*Improvement in Clover Hullers.*—Patented February 13, 1855. (Plates, p. 2.)

The screen I is somewhat inclined, and the chaff and hulls pass over the depressed end of it and fall upon the floor. The seed passes through screen I, and falls upon the lower screen J, and through it upon the inclined bottom K, and passes down the bottom K into blast passage G. The tailings pass off the depressed end of screen J, and enter underneath K and upon screen L. Any seed that may pass into this space with the tailings falls through screen L, and passes through aperture M and into passage G. The tailings pass out of aperture *b*<sup>1</sup> at the side of the shoe above screen L, screen L not allowing the tailing to pass through it. The tail-boards, by being properly adjusted, according to the strength of the blast, prevent the seed from being blown out of the shoe with the chaff.

The inventor says, I do not claim adjustable tail-boards in separators, nor inclined guide-boards for receiving and conducting the seeds to their receptacle; nor do I claim a tailing-screen, except under an arrangement like that set forth.

But I *claim* the arrangement of the two tail-boards *d d*, in combination

with the tailing screen L, so arranged under the inclined board K, that it shall be out of the way of the blast, and yet deliver the seed at M into the main receptacle, and the tailings out at its side through the aperture *b'*, it being understood that the outer and inner tail-boards must be adjusted, respectively, with reference to the screens I and J, all as set forth.

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No. 12,462.—MARTIN H. MANSFIELD.—*Improvement in Hulling and Cleaning Clover Seed*.—Patented February 27, 1855. (Plates, p. 2.)

The nature of this invention consists in employing a considerably greater length of screen than has heretofore been used in such machines, and in receiving the seeds which fall from said screen upon an endless apron, which conveys the seeds to a receptacle *k*, placed in front of and near the winnowing fan *d*.

*Claim*.—The arrangement and combined operation of the screen *e*, the endless conveyor *f*, and the fan *d*, in such a manner as to enable a strong blast to be employed without wasting the seeds, substantially as set forth.

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No. 12,454.—JEREMIAH P. SMITH.—*Improvement in Corn Shellers*.—Patented February 27, 1855. (Plates, p. 2.)

The ribs *l* and *n* are intended to shell the corn when operated upon by the cylinder *a*. The slides *o o* are intended for the shelling bar *t* to slide on backwards and forwards. The open spaces *g* between the ribs allow the shelled corn to drop through without breaking the grains. The guide-frames *r r* are in separate pieces, screwed on the guide-beam *p*, so that they can be adjusted backwards or forwards to suit the nature of the corn. The shelling-bar *t* (which is also toothed) presses the ears of corn against the cylinder (by means of spring *u*). The feeder-plate *v* derives a vibrating motion from the zigzag curve in pulley *z*, and has teeth on both sides to work in the corn by its continual vibration.

The inventor says, I am aware that an adjustable flat toothed bar has been used opposite to a toothed cylinder in corn shellers; I am also aware that the ribbed shelling bar has been used; therefore, I do not claim any of the above-mentioned parts.

But I *claim*, first, the breast-beam *j*, having fluted concave ribs *l l*, cross ribs *n n*, with openings or spaces *g g*, and slides *o o*.

Second, I *claim* the guide-frames *r r* in separate pieces, for the purpose described.

Third, I *claim* the vibrating feeder having teeth thereon, in combination with the pulley *z*, having a zigzag groove *e*, substantially as described.



No. 13,122.—ABRAM CLOW and CHAS. N. CLOW.—*Improvement in Corn Shellers*.—Patented June 26, 1855. (Plates, p. 2.)

The cobs fall, after having the corn shelled from them, to the bottom of tube H at the point *f*, and are carried around by the revolutions of shaft E to the point *g*; and as the space is narrower at that point than at the point *f*, the screw *d* will enter the cobs and force them upward to the opening *e*, through which they fall upon the floor.

The inventor says, We do not claim separately either of the parts described for shelling the corn from the cobs, for shelling-wheels similarly constructed have been previously invented.

But we *claim* the tube H in combination with the screw *d*, on the shaft E, arranged as shown, for discharging the cobs separately from the shelled corn.

No. 13,182.—JOHN J. ROLLOW.—*Improvement in Machine for Shucking and Shelling Corn*.—Patented July 3, 1855. (Plates, p. 2.)

The concave *d* is hinged at *e*, and is pressed upward towards the cylinder C by springs *f*. The corn in the shuck is fed into the hopper F, and on passing down the thicker end of the ear is caught by the ribs on the cylinder, and brought in contact with the diagonal rib on the concave, which inclines it sideways, always in the same direction, when they split the shuck from end to end on two opposite sides, and the two diagonal projections, in crossing each other, turn the husk one half each way entirely back over the stalk, when the corn is exposed to the action of the diagonal ribs and ribs on the concave and cylinder, which pick it off the cob, the corn passing through the perforated concave whilst the cob is discharged on to the chute D.

*Claim*.—The diagonal ribbed perforated concave when hinged at the upper end, and supported on springs at the lower end, in combination with the diagonal ribbed cylinder, substantially as and for the purpose specified.

No. 13,634.—CHAS. BISHOP.—*Improvement in Corn Shellers*.—Patented October 9, 1855. (Plates, p. 2.)

The nature of this invention will be understood from the claim and engraving.

The inventor says, I do not claim separately the toothed or corrugated wheel C, for that has been previously used.

But I *claim*, in combination with a shelling disk or wheel, such as described, the series of ear boxes radially arranged around it; said boxes being composed of elastic backs and unyielding partitions as described.

No. 13,640.—STEPHEN ELLIOTT.—*Improvement in Corn Shellers*.—Patented October 9, 1855. (Plates, p. 3.)

*hh* are springs which support the screws B and press them together, so as to suit the different sizes of the ears of corn. The screws and

spring clamps D D are geared together by wheels F and C. The corn is received in the centre of the screws B, which, in their revolutions, carry it down into the jaws of the sheller, or spring clamps D, which receive it at the centre of motion; and, as they revolve, the corn is shelled from the cob.

Figure 1 represents a side elevation; and

Figure 2, a top view of the machine.

*Claim.*—The combination of the screws B with the clamping jaws D, arranged and operating in the manner set forth.

No. 13,922.—JEREMIAH P. SMITH.—*Improvement in Corn-Shellers.*—Patented December 11, 1855. (Plates, p. 3.)

The projections *d* and *c* (not exactly at right angles to each other) serve to facilitate the separation of the corn from the cobs, and to give a slight turning motion to the ears of corn while passing down through the machine. Figure 2 represents a plan, and figure 1 a vertical section of the machine.

*Claim.*—The construction of the frustrums D and C, with their winding wings *d d* upon both, and cross projections *c c* upon one, substantially in the manner and for the purposes set forth.

No. 13,912.—JAMES JONES JOHNSTON.—*Improvement in Corn-Shellers.*—Patented December 11, 1855. (Plates, p. 3.)

This invention consists in running a series of secondary pickers around the cob, as the cob is projected by the main cylinder through the discharging aperture of the ordinary corn-sheller, and thereby securing the stripping from the cob of every grain of corn.

The gear wheel *j* projects through opening *k*, and drives pinion *m* in the circular casing *u*, which covers an opening in the case *a*. The wheel *m* is fastened to ring *n*, and both (*m* and *n*) to a disc *o*, with a central opening of the size of the opening in case *a*; the two rings *q r* are also fastened to disc *o*; and through slots at three equal distances apart play the secondary pickers *f*, pressed inwards by springs *s*. These pickers *f* are prevented from projecting too far or from dropping out by shoulder *t*. The shelled corn passes out at *b*, and the cobs pass through the opening *w*.

*Claim.*—The secondary cleaners or pickers *f* revolved around the cob, as the cob is projected by the main cylinder *c* through the opening in the case *a* of the machine, substantially in the manner and for the purpose described.

No. 13,997.—JAMES ROBB.—*Improvement in Corn-Shellers.*—Patented December 25, 1855. (Plates, p. 3.)

The corn, being received at one end of the cylinder B, is shelled between the cylinder and concave F; the cobs, as they cannot pass the arrester *h*, will finally be worked out (by the spiral action of the teeth)

at the discharge opening E at the other end of the cylinder; the cob arrester is perforated, so as to let the blast (see arrows) freely pass. As soon as a few shovelfuls of ears are thrown in, the cobs and corn partially fill the space between the cylinder and concave, and thus prevent the blast (created by the revolutions of the cylinder) from following the cylinder, and direct it over the edge *b* of the concave. The blast is conducted by the casing G, immediately under the riddle H.

*Claim.*—The hood or casing G, in combination with the concave F, fender-board or cob-arrester *h*, and cylinder B, for the purpose of directing a blast, and separating or cleaning the corn and cob, substantially as described.

No. 13,436.—RICHARD RAY.—*Improvement in Machines for gathering Cotton Stalks.*—Patented August 14, 1855. (Plates, p. 3.)

The teeth of the revolving puller E lay hold of the stalk of the cotton near the earth, and the stalk having been previously bent backwards and directed over E, by the revolving endless band K, the shy nature of the cotton plant assists in bringing it into a proper position for the teeth of E to draw the plant up by the roots; on the further revolution of E, the stalks are forced off the teeth by means of a sliding plate F, which forms a shield to the teeth of one side of E, when the edge of F is brought in contact with the guide Z, and being liberated drops on the ground, to be afterwards gathered in bunches by rake G.

*Claim.*—The arrangement of the apron K, plate E, and rake G, all operated in the manner described, for the purposes of pulling up and gathering stalks of cotton, as described.

No. 13,505.—S. BOWERMAN.—*Improvement in Machine for cutting standing Cotton Stalks.*—Patented August 28, 1855. (Plates, p. 3.)

As the machine is drawn along, the wheel J rotates, and the cogs *d*, taking into rack K, raise the block F; and when the cogs pass out from the rack, the springs I force down the block, and the knife G (attached to the block) cuts the cotton stalk, which was previously bent over by the frame. (See engraving.)

I *claim* the combination of the block F, knife G, rods HH, springs II, rack K, and cog-wheel J, when arranged for the purpose specified and shown.

No. 13,538.—J. W. BROUAGE.—*Improvement in Machines for cutting standing Cotton Stalks.*—Patented September 11, 1855. (Plates, p. 3.)

As the machine is drawn along, the stalks are caught by the frame L, and forced or bent into the angles of bars *e*, and are cut by the rotating saws *d*. The front wheels and draught pole (not represented in the engravings) are attached to bar C.

I *claim* the employment or use of a series of circular saws *d*, placed

upon a vertical shaft J, and rotating between the bars *e* of a metallic frame L, the saws and frame being placed upon, or attached to, a proper carriage, and arranged as shown.

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No. 13,877.—GEO. A. HOWE.—*Improvement in Hand Cotton Pickers.*—Patented December 4, 1855. (Plates, p. 4.)

To operate this picker, the strap, which is passed through ring V, is put over one shoulder and under the opposite arm; the thumb is then placed in the ring W, and hand lever N operated. The roller B is then brought in contact with the cotton-ball, and the cotton picked out by the chain of gatherers and carried into the machine. As the chain passes stripper H, the cotton is detached and falls into bag R, which, when full, can be detached and the cotton emptied.

*Claim.*—The endless belt or chain of gatherers F, stripper H, bag R, and case A A, when combined, arranged, and operated, substantially in the manner and for the purpose set forth.

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No. 13,894.—R. C. WRENN.—*Improvement in Machines for Preparing Cotton Seed for Planting.*—Patented December 4, 1855. (Plates, p. 4.)

The seeds are admitted through opening 9; box 8 contains the lime, or such material as may be used to form a body around the seed; the projections 6 on lever 7 being alternately struck by the row of teeth 4, the lime is jarred into the case, the teeth 3 acting in conjunction with teeth 11, separate the seeds, and at the same time (being spirally set) carry the seeds to the discharge 12. The pads 5, being placed diagonally across the cylinder, assist in drawing the seeds when rolling towards the discharge opening.

*Claim.*—Pads 5, in combination with cylinder 1, and teeth 11 and 4, in combination with hopper slide, combined and arranged substantially in the manner and for the purpose set forth.

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No. 12,163.—JNO. IMEL.—*Improvement in Cultivators.*—Patented January 2, 1855. (Plates, p. 4.)

This improvement consists in the guard *a*, which is to protect the young sprouting crop from being crushed or buried beneath the clods turned over by the inner shares *bb'*. This guard is somewhat pointed in front, and is bent to the shape of a cylinder, of diameter somewhat greater than the width of the plate, and is so attached to the beam *c* as to present its concave surface downwards. The beam *c* is in front, hinged to the under side of the tongue *d*, and terminates behind in a perforated shank *k*, by which its height can be adjusted.

*Claim.*—The curved and adjustable guard or fender, hinged, as described, to a tongue supported upon running gear.

No. 12,332.—JOS. STOCKDALE.—*Improvement in Cultivator-Teeth*.—Patented January 30, 1855. (Plates, p. 4.)

The reversible plate is made to be used on either side of the frame of the cultivator, and being placed on a line parallel with the inside of the frame of the cultivator, as seen in dotted lines marked 5, places the tooth or teeth in the exact position to make straight lands or furrows; further, the reversible plate being made of a greater thickness at one end sets the tooth or teeth in the exact position or pitch for practical use.

*Claim*.—The reversible cast-iron plate, marked fig. 2, with the groove on the under side, marked letter K, round cast iron stay-pin on the upper side G, also the application of the top of the cultivator-tooth in the groove aforesaid, and also the application of the wrought iron bolt or shank passing through the said plate as described.

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No. 12,428.—JONATHAN A. ROBINSON.—*Improvement in Hand-Cultivators*.—Patented February 20, 1855. (Plates, p. 4.)

The dotted central line, in figure 2, represents the row of plants to be weeded. The instrument is wheeled along by the operator in the direction of the arrow, so that the knives shall cut close up on each side of the plants, the distance between the knives being so adjusted that the plants shall not be injured by them.

The inventor says: I do not claim the yoke A, nor the knives B; but what I *claim* is the instrument as described, for weeding and cultivating plants in rows, the same consisting substantially of the combination of the yoke A with the knives B, constructed and operating in the manner and for the purpose set forth.

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No. 12,478.—NEHEMIAH B. CHASE and CHAUNCEY W. SAUNDERS.—*Improvement in Hand-Cultivators*.—Patented March 6, 1855. (Plates, p. 4.)

The knives A A are placed some distance below the frame, and are held in slats B B by means of nuts M M, which allow of an adjustment as to the angle and the distance of the knives from the frame and from each other.

The inventors say: We are aware that a hand-cultivator carried on wheels has been constructed, with shares not guarded at the points, and having both a rotary and a lateral adjustability; therefore, we do not claim these features.

But we *claim* the arrangement of the knives A A, upon the frame, so as to be adjustable in an oblique direction, and also reversible, as set forth.

No. 12,536.—SAML. A. KNOX, assignor to RUGGLES, NOURSE, MASON, and Co.—*Improvement in Cultivators*.—Patented March 13, 1855. (Plates, p. 4.)

The object of tooth K is to enable the attendant, while having hold of the handles, to steady the horse-hoe, and to prevent the lateral irregular motion of it which is produced by the draft and obstructions. It serves also as a fulcrum to move the hoe, so as to suddenly lift the rear part of it to throw or flint loose earth among stalks of the hills.

The inventor says: I do not claim combining a curved and pointed knife with a common land plough, when said knife is placed against or very near to the nose of the plough; my employment of the knife or tooth on the horse hoe being in a different manner and for a different purpose from its use on a plough.

But what I *claim* is arranging the curved knife, or pointed tooth K, at or near the front end of the beam of the horse hoe, while the main or double hoe C is disposed at or near the rear end of the beam, and so as to enable the said tooth to be used in the manner and for the purposes as stated; it being employed in a common plough simply for cutting the sod or opening it for the reception of the nose of the plough.

No. 12,571.—GEO. W. N. YOST.—*Improvement in Cultivators*.—Patented March 20, 1855. (Plates, p. 5.)

The scraper E is secured to handle B by two bolts *c c*, it slightly turning on the lower one, and the upper one working in a slot in the scraper for the purpose of raising or lowering the point *d* to work properly on the side of a higher or lower row.

The inventor says: I am aware that cultivators and scrapers have been used, which were laterally and perpendicularly adjustable; therefore, I do not claim such devices.

But I *claim* the combination of the adjustable scraper E, with the bar, point, &c., D, as described, for the purpose of baring off the row and rapping up the middle; also, for scraping off the row, and rolling the scrapings over into the furrow opened by the plough, substantially as set forth.

No. 12,589.—HERVEY D. GANSE.—*Improvement in Cultivators*.—Patented March 27, 1855. (Plates, p. 5.)

*f d* are cutting edges which incline backwards at an angle sufficient to cause incumbrances to pass off backward without choking. The parts 1 are fenders, which protect the young plants from being covered. The cutting edge *d k* of the parts 2, continues the edge *1 d*. The earth is shaved down and pressed outward by the inclined edges and the lateral flare of the fenders, and then flows over the mould-boards completely crumbled, filling again the furrows from which it has been taken. The plants, however small, are not moved or covered.

The inventor says: I *claim*, 1st, That shape of the upright forms or fenders described, in its application to the purposes described, by which the foremost point of each fender is elevated to or above the surface of the ground, and the lower or cutting edge inclines backward

from that point, in the manner described, so as to secure the result described.

2d. The combination of said fenders with the mould boards and wheels, in the manner described, the invention of which mould boards and wheels I do not claim.

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No. 12,609.—R. P. VANHORN.—*Improvement in Cultivators*.—Patented March 27, 1855. (Plates, p. 5.)

The object of making the frame A of an elongated shape is to cause it to run smoothly and steadily. The fore tooth has a cutter-edge and very small nosing, and serves to cut the sods and roots; the rear tooth D, which is the largest of all, throws the earth towards the corn, and leaves a fine deep furrow for the water to settle in.

*Claim.*—The peculiar elongated rhombus-shaped, wrought-iron frame and arrangement of teeth, the front angle bearing a light steel cutter tooth, and the rear angle a large shovel tooth, in the manner and for the purposes set forth.

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No. 12,611.—WM. P. ZANE.—*Improvement in Cultivators*.—Patented March 27, 1855. (Plates, p. 5.)

The hook *f* divides the potato vines centrally between the rows. The hooks *g g* lift up the vines and throw them to each side. They are shorter than hook *f*, and are arranged such a distance in rear of hook *f* as to bring the points of all said hooks into the same horizontal plane. The hooks must be of proper shape, so as not to cut the vines, and their points are at such a height above the points of the cultivators *h*, that when the cultivators are inserted the proper depth, the points of *f g g* will be even with the surface of the earth.

*Claim.*—The vine-hooks *f g g* arranged in such a manner in relation to the cultivating teeth *h h h*, that the said hooks will remove the vines out of the way of the said cultivating teeth, and allow them to operate upon the soil without injury to the vines, substantially as set forth.

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No. 12,653.—FRANCIS L. SMITHSON.—*Improvement in Cultivators*.—Patented April 3, 1855. (Plates, p. 5.)

The teeth *f* are on a swivel bar, so that when drawn forward they are in place, but when the horse backs they turn up, and thus pass over the ground without action. The teeth are designed to break and loosen the earth just previous to planting tobacco, and the cylinder C following after is made to press the top of the hill.

*Claim.*—The combination of the harrow teeth and cylinder, substantially in the manner and for the purpose set forth.

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No. 12,744.—JOHN STRYKER.—*Improvement in Cultivators*.—Patented April 17, 1855. (Plates, p. 5.)

The object of this improvement is to obviate the usual serpentine, *unsteady movement* of ordinary wheel cultivators. The front supports

*k* are permanently attached to the frame *a b*. The rear supports *k* are adjustable, so as to serve not only as supports, but also to regulate the depth of action of the coulters.

*Claim.*—The application or use of front and rear supports or supporters, which not only answer all the purposes of wheels, but regulate and govern the action of the coulters in the ground; constructed and arranged substantially in the manner and for the purpose herein set forth.

No. 13,062.—JOS. MONTGOMERY & JAMES MONTGOMERY.—*Improvement in Wheat Fans*.—Patented June 12, 1855. (Plates, p. 5.)

Figure 1, represents this fan arranged for chaffing, and figure 2, for cleaning the grain after being chaffed. The operations of the machine will be understood from the engravings.

*Claim.*—Constructing the screen-box, with the addition of a plate or apron under its upper screen, for conveying whatever passes through said screen to the front part of the box, and of a fine screen at the bottom for separating sand or grit from the small grain and seeds caught therein, in combination with a box or its equivalent beneath, for collecting or conveying away the sand or grit therein separated.

Also, adding an adjustable board or shelf *H* in the front part of the shoe, so situated that light and bulky impurities, blown from the apron, may be caught thereon, and conveyed out of the shoe, while sufficient space is left behind and below it for the whole extent of screen beneath to be employed to receive the grain, substantially as set forth.

No. 12,453 LEWIS TEESE & SON.—*Improvement in Forks for Gold Diggers*.—Patented February 27, 1855. Antedated November 27, 1855. (Plates, p. 5.)

The prongs of this fork are triangular, the edges upward, so that the smallest particles of gold cannot lodge on them; the backs of the prongs are flat, so that the fork will slide easily, and not wear out the sluice boxes.

*Claims.*—Making the fork tines triangular, with one side of the triangle forming the back of the tines, for the purposes and in the manner set forth, whether applied to more or less number of tines, or length or breadth of fork.

No. 12,973.—CHAPIN STREET.—*Improvement in Grain Drills*.—Patented May 29, 1855. (Plates, p. 6.)

The seeds pass through the seed chambers and the holes *x*, (these holes being alternately covered by guards *m*, as the distributor vibrates,) and finally through conductors *p q*, and drill *r*, to the ground. The dust and grit collect in the spaces *o*<sup>1</sup>, and passes out through holes *x*<sup>1</sup>. The strength with which spring *t* bears upon *n*, is regulated



by screw  $i^1$ , and the distance of the movement is regulated by screw  $y$ . The movement is created by means of cam  $v$ . The lifting board  $h$  passes across the machine in front of the seed box. Connecting rod  $u$  is attached at one end to support  $i$ , and at the other end to the sliding cam  $e$ , which moves in a slot at one end of the machine. The board  $h$  can be lifted by means of a lever, which will draw forward cam  $e$ , by means of rod  $u$ ; the cam  $e$ , in moving forward, presses out spring  $t$ , the distributor remains stationary, and no seed will be discharged until board  $h$  is brought back to its former position. In throwing up lever  $h^1$ , the rods  $r^1$  are also drawn up, and with them the drills  $r$ ; so that not only is the seed stopped from discharging, but the drills are also lifted clear from all obstructions.

The inventor says: I *claim*, first, the seed distributor  $n$ , with its seed chambers  $o$ , and dust boxes  $o^1$ , in combination with the cam wheel  $v$ , the spring  $t$ , and adjusting screens  $t$  and  $y$ .

Second. I do not claim the lifting board  $h$ , nor the conductors  $p$  and  $q$ , nor drills  $r$ , separately.

But I *claim* their peculiar arrangement and connection with the sliding cam  $e$ , as set forth.

No. 13,143.—CHARLES TAYLOR.—*Improvement in Machines for Cutting Grain, Grass, &c.*—Patented June 26, 1855. (Plates, p. 6.)

The cutter-blocks  $h$  are fastened to the main frame  $d$  by means of braces  $g$ , and the cutters  $f$  are screwed to the cutter-blocks. The rear ends of the cutters, being unconnected with the machine, give elasticity to the cutters, which enables them to meet any unusual resistance without breaking. The fact of their being disconnected with each other at the rear ends prevents the clogging of the machine.  $k$  is the platform, and  $a$   $a$  are the runners.

*Claim.*—The use of a series of knives or cutters connected with the frame of the machine at the point or angle formed by the connexion of each pair of cutters, but not connected with the machine, or with each other, at the heel, and removeable at pleasure, substantially in the manner and for the purposes specified.

No. 13,532.—J. VAN HORNE.—*Improvement in Grain Separators.*—Patented September 4, 1855. (Plates, p. 6.)

The corn, previously shelled by a corn-sheller, (arranged in front of spout  $G$  and not shown in the engravings,) and the cobs pass down the spout  $G$  into screen  $F$ , through which a blast of air passes, entering at  $I$ . As screen  $F$  rotates, the cobs will be carried by the spiral-toothed flanches  $g^1$  to the outer end of screen  $F$ , and will be discharged therefrom, while the shelled corn will pass through the screen and fall upon the inner side of cylinder  $E$ , and will be conveyed by the flanches  $g$  to the hole  $f$ , through which the corn passes into the buckets  $d$ , and is carried around by them and discharged from the side of the framing, as shown in figure 2.

I *claim* the revolving cylinder E, furnished with buckets *d*, flanching *p*, and holes *f*, in combination with the revolving cylindrical screen F, for the purpose of cleaning the grain, separating the chaff, and elevating the grain and delivering it, in the manner set forth.

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No. 13,644.—PETER GEISER.—*Improvement in Grain Separators*.—Patented October 9, 1855. (Plates, p. 6.)

The air enters the fan case through the perforated side plates I, each of which plates is covered with a moveable plate K, the perforations of which correspond with the perforations in plates I. The moveable plates can turn on the centre pin of the fan, and are connected by bars *t* and *u*. When the blast increases too much, it will act upon and depress the broad bar *t*, and the solid parts of plate K will partially cover the apertures in plates I, thereby decreasing the admission of air. As soon as the blast becomes weaker, the plates K (being properly balanced) will again return to their original position.

The grain and straw is fed upwards on slide E by rakers BC, which are vibrated each by a double crank *a*, one of which cranks is driven by pulley D. As the straw is raked upwards, the rakers at the same time act like combs, causing the blades of straw to assume a parallel position to each other, and causing the grain to settle through the straw down plane E, where, with the chaff, it passes towards and through the aperture *c*, out to the curved apron *d*, which is hung on journals *f*, and receives a shaking motion by means of the square ends of roller *k* acting upon the outer ends of the apron. The front edge of the apron is provided with teeth like a comb, which teeth reach between the grooves on roller *k*, and thus form meshes through which the grain can fall, constituting a substitute for a screen. The unseparated grain and chaff pass over roller *k*, and drop down on to the regulating dividing shelf or apron *n*, constructed similarly to apron *d*. The shoulder in the centre of apron *n* divides the apron into two surfaces. The heavy grain remains on the rear surface, which, after the chaff has been blown off, will drop down into the box L. The lighter grain goes forward to comb and roller *l*, and drops down the screen M into the box.

The slide S is hinged to the upper portion of the straw carrier, and the slide Z is hinged to the slide S. By adjusting these slides the straw can be carried to either side of the machine.

The inventor says: I am aware a self-acting blast regulator for fan blowers is not new; this I do not claim.

But I *claim* the vanes within the fan case against which the blast acts, for the purpose of closing or opening the register automatically, to regulate the blast, as set forth.

I also claim the manner of separating the grain from the straw and other impurities, by means of aprons, combs, and grooved rollers, without the use of a riddle, whether one, two, or more sets of such separating apparatus be used, substantially as described.

I also claim, in combination with the separating apparatus, the self-regulating dividing shelf, upon which the grain drops, for the purpose

of carrying the heavy grain back, and the light forward, for a second or more complete separation, as set forth.

I also claim the hinging of the upper to the lower portion of the straw carrier frame, and providing it with adjustable slides or conveyors for dividing and conveying the straw into any desired localities, as set forth.

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No. 13,688.—BENJ. WRIGHT and JOHN BEAN.—*Improvement in Grain Separators*.—Patented October 16, 1855. (Plates, p. 6.)

The grain and straw pass between cylinder K and concave J, upon shoe E, which has a shaking motion; the straw is carried along the shoe and drops off the ends of the slats *c*, (see arrows *x*), while the grain and short light particles fall between the fingers upon screen B; the grain passes through screen B, and falls upon screen D, and is discharged in the direction of arrow 1; the short light particles are discharged in the direction of arrow 2; and dust, chaff, etc., are blown out from both screens by a blast coming from fan G.

The inventors say: We do not claim the cylinder, concave, and fan separately, for they have been previously used.

But we *claim* the employment or use of the rotating screens B D, and shoe E, when arranged substantially as shown and described, whereby the straw is carried through the screens, and the grain shaken therefrom within the screens, as described.

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No. 12,415.—DANL. HALDEMAN.—*Improvement in Harrows*.—Patented February 20, 1855. (Plates, p. 7.)

*Claim*.—The so forming and hinging together of the frames or frame pieces of a harrow, as that it may be susceptible of such an adjustment as represented, and so that it may be folded up and rest upon a portion of the frame which forms a sled, upon which it may be conveyed from place to place, as described. (See engraving.)

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No. 12,659.—CHARLES CLARENI, assignor to CHARLES CLARENI and GEORGE P. FIELD.—*Improvement in Harrows*.—Patented April 3, 1855. (Plates, p. 7.)

*a* is the draft pole.

The harrow consists of three segments *f*, which are provided with harrow teeth *i*. Each of the segments has two radial arms *e e*, which, where they meet, are bolted to short radial arms *d' d'* projecting from plates *d*, which latter are hinged to the central plate *c* by means of horizontal pivots *c' c'*, thus allowing each of the segments to rise and fall freely and independent of the others, to adapt themselves to the inequality of the surface.

Figure 2 represents a section on line *x y*.

Figure 3 is drawn on an enlarged scale.

*Claim*.—Making the rotating harrow in flexible segments as described.

No. 12,667.—LYMAN BRAINARD and LEVI NEWTON.—*Improvement in Rotary Harrows*.—Patented April 10, 1865. (Plates, p. 7.)

The three ends of frame A B support three horizontal wheels D, free to revolve on their vertical journals. Teeth *s* projecting vertically downwards are inserted into the rim and arms of said wheels. The smaller vertical wheels F F H, on the upper side, are for the purpose of drawing the harrow on when removing it, and are put into use by turning the harrow bottom side up. The arrangement of the harrowing wheels D allows them to turn or react when coming in contact with any obstacle.

The inventors say: We are aware that wheel-shaped harrow-frames have been used, both without rotation and with a compulsory rotation in one direction.

But we *claim* the employment of the wheel-shaped harrows when fastened upon a central point, so as to turn in either direction, for the purpose and in the manner set forth.

No. 13,257.—WILLIAM GOURLEY.—*Improvement in Harrows*.—Patented July 17, 1855. (Plates, p. 7.)

The vertical slots in the bearings F of the roller D, allow the latter to rise and fall. The roller knives are designed to cut such clods as may escape the knives of the frame, the surface of the roller meantime compressing the ground. By inserting boxes L under the roller-pivots, the roller will press only partially on the ground, and, consequently, additional weight will be thrown on the frame.

The inventor says: I do not claim any of the parts separately; nor do I claim so attaching to a clod cutter or harrow a roller, that may be adjusted to any given height from the ground, as this has been done before.

But I *claim* arranging, in connection with a clod-cutter, a cutting roller, which may adapt itself to the inequalities of the ground, and also be made to throw its weight upon the clod-cutter or not, as desired, substantially in the manner and for the purpose set forth.

No. 12,121.—JOHN E. BROWN and STEPHEN S. BARTLETT.—*Improvement in Grain and Grass Harvesters*.—Patented June 2, 1855. (Plates, p. 7.)

A bar G has its fulcrum in shaft F, which turns in stands E, extending from main frame A. The other end of bar G has a projection K, to which is attached a pin sliding in slot I of upright stand H, which latter extends from main frame A. The projecting parts L and M of said bar G receive the journals of rock-shaft N, from which rock-shaft extends the cutter-bar *n*, which arrangement is to allow the cutter-bar to rise and fall according to the inequalities of the ground. The rack *x*, which is to work the cutter-knives, is motioned by the linked rods *b* and *z*, which latter is horizontally linked to the vertical rock-shaft *a*, so as to allow arm *z* to accommodate itself to the undulations of the cutter-bar. Connecting rods *d f*, and eccentric *g*, impart to shaft *a* the rocking motion.

Fig. 1, top view; fig. 2, view from one side; fig. 3, view from the other side.

*Claim.*—Hanging or hinging the bar G to the carriage, so as to vibrate substantially as described, in combination with the hanging or hinging of the cutter stock to the bar G, substantially as described, so that the cutter-stock may vibrate and accommodate itself to any undulations in the surface of the ground, and so that it may be raised by the attendant to pass stones, stumps, or other obstructions, without tipping the carriage.

No. 12,123.—MARSHALL BURNETT and CHARLES VANDER WOERD.—*Improvement in Grain and Grass Harvesters.*—Patented Jan. 2, 1855. (Plates, p. 8.)

*Claim.*—Making the same shaft or axle H, which serves to drive the cutter-rods, cutter, or cutters, serve also as the pivot or centre of the joint between the cutter-bar M and the carriage A, substantially as herein described, (see illustration,) thereby preserving the proper relation between the cutter or cutters and their driving mechanism.

No. 12,215.—JOHN E. NEWCOMB.—*Improvement in Grain Harvesters.*—Patented January 9, 1855. (Plates, p. 8.)

The apron or platform *b* upon which the grain is received after it is cut by the scythes, is hinged at *b*<sup>1</sup>, and is, at intervals, dropped (see arrow 2) so as to drop its load, by means of a crank *d*<sup>1</sup> and rod *d*, which is operated upon by a properly-shaped cam on the axle of the driving wheel. The apron has, underneath, an additional platform *b*<sup>2</sup>, which can be slid out, (see arrow 1,) more or less, so as to increase or diminish the actual length of the platform *bb*<sup>2</sup>, to prevent vent the grain from running over the platform before it drops.

The scythe-plate *f* is kept in close contact with the shear edges of the fingers by supporting the scythe-plate by a grooved bar *i*, under the said scythe-plate, and about midway between its front edges (the scythe-points) and its rear edge, which latter slides, as usual, in a groove in a stationary cross-bar. The bar *i* is kept up against the under surface of the scythe-plate by set-screws, and the groove is kept filled with oil to obviate excessive friction.

*Claim.*—Making the hinged apron extensible, substantially in the manner set forth.

Also, the mode of keeping the scythe-plate to the shear edges of the guides, said mode consisting in the employment of a grooved pressure-plate or bar and set-screws, for the purposes herein set forth.

No. 12,252.—O. B. JUDD.—*Improvement in Grain and Grass Harvesters.*—Patented January 16, 1855. (Plates, p. 8.)

The cutters MN, arranged at the outer end of the machine, are to cut the grain that may overlap or become entangled at the inner edge of the swath.

**Claim.**—1st. The employment or use of the rotating cutters M, and stationary cutter N, arranged substantially as shown and for the purpose set forth.

2d. Attaching the connecting rod G to the outer end of the sickle H, as shown, for the purpose of being enabled to employ a long straight rod with a compact machine.

3d. Attaching the sickle bar I to the finger bar F, by hinges, as shown, whereby the sickle and connecting rod are kept properly in place, and the sickle readily attached to, and detached from, the machine, as described.

No. 12,323.—AARON PALMER.—*Improvement in the construction of the frame of Grass-Harvesters.*—Patented January 30, 1855. (Plates, p. 8)

**Claim.**—Connecting the wheel A, the cutter beam B, and the tongue C, to the frame D, in the manner described, by which the frame operates as a lever, of which the axle of the wheel A is the fulcrum; by which means the cutter-beam rises and falls independent of the wheel, thereby adapting itself to undulating surfaces; and by which means the draft of the team holds the cutter-beam snug to the ground, thereby causing the machine to cut close and smooth.

No. 12,327.—DAVID RUSSELL.—*Improvement in Harvester-Cutters.*—Patented January 30, 1855. (Plates, p. 9.)

The cutters *a a* are let into the chains on the inner sides by dovetailing them in and fastening them by screws, making the chains a smooth surface after the cutters are let in. The cog-wheels *b* are revolved by means of driving-pulleys *d*, and as they are revolved in opposite directions, the knives pass over each other in the form of shears, cutting the grain as it comes within their reach.

**Claim.**—The combination of cutter with an endless chain or chains operating as described, and for the purposes set forth.

No. 12,339.—EDWIN A. MORRISON, assignor to HIMSELF and ROBERT J. MORRISON.—*Improvement in Delivering Apparatus of Grain Harvesters.*—Patented January 30, 1855. (Plates, p. 9.)

At that end of the frame, towards which the cut grain is carried, is hinged a door E, to which a cord and weight H are attached so as to hold the door in the position shown in the engraving. The cut grain collects under the projecting flange I, until the rake teeth D (attached to the carrying belt C) arrive at the door, raise it up against the weight, and allow the grain to drop out.

The inventor says: I am fully aware that an endless belt with rakes thereon for conveying the cut grain from the platform, and hinged doors, controlled by weight or spring, have both been used on reaping machines for gathering and delivering the cut grain in bundles; these I do not claim.

But I *claim*, in combination with an endless conveying belt with rakes thereon, and the weighted or spring door, the inclined flange on said door under which the grain is carried and compressed, until the rake teeth come against said flange, when the door is forced upward on its hinges and the cut grain delivered in compact bundles, as set forth.

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No. 12,363.—JAMES H. MAYDOLE and ALBERT W. MORSE.—*Improvement in Grass Harvesters*.—Patented February 6, 1855. (Plates, p. 9.)

The nature of this improvement consists in combining a roller *a* with a grass harvester by means of the levers *b* and *c*, (*c* having its fulcrum in *m*,) and the parts in connection with them in such manner that a person riding upon seat *n* can elevate or depress arm *d*, which carries and guides the cutter plate *e*, causing the whole weight of said arm and cutter plate to rest upon the said roller, or allow said arm to rest upon the ground, as circumstances may require.

*Claim*.—The combination of the adjustable and controllable roller *a* with a grass harvester, substantially and for the purpose set forth.

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No. 12,367.—CYRENUS WHEELER.—*Improvement in Grain and Grass Harvesters*.—Patented February 6, 1855. (Plates, p. 9.)

The holes *g* serve for the passage through the cutter bar *x* of the dirt and grit that would otherwise collect on the stationary cutters *r*. The ribs *t* form a bearing for the projections *u* on the under sides of the shanks *m*; *y* are the cavities for inserting cutters *r*; *s* are holes for inserting bolts *p* for attaching the moveable cutters *m* *l*; *z* are braces united to the ribs *d* of the cutter bar and to the stationary cutters *r*, and they serve as a protection to the cutters. The ribs *d* serve also to protect a spring *a*, one end of which is fastened to the cutter bar. To the other end of spring *a* is attached (by means of a pin *b*) the lower end of bolt *p*, which passes up through the hole *s*, and serves as fulcrum for the shank and moveable cutter *m* *l*. The spring *a*, by pressing the bolt *p* downwards, serves to press continually the moveable cutters *l* towards the stationary cutters *r*. The moveable cutters receive a vibrating motion around their fulcra by the usual means of connecting rod, crank, etc.

The revolutions of wheel 3 revolve also the disc 5 with the teeth 8 along the apron 2, thereby removing the cut from the standing grass, and leaving a clear and uniform track adjoining the standing grass.

*Claim*.—The combination of the double-edged cutters *r* *r* with the cutter bar *x* *x*, the braces *z* *z*, the vibrating cutters *l* *l*, their shanks *m* *m*, projections *u* *u*, the circular ribs *t* *t*, the bolts *p* *p*, the springs *a*, the holes *q* *q*, the ribs *d*, the cavities *y* *y*, or their equivalents, as substantially set forth, the whole forming the cutting apparatus of the machine.

2d. The revolving or track rake, consisting of its frame 1, its wheel 3, shaft 4, pinions 7 10, shaft 6, wheel 5, teeth 8, apron 2, joint 9, and cap 11, or their equivalents, arranged and combined substantially as set forth.

No. 12,393.—ROBT. J. MORRISON, assignor to ROBT. J. MORRISON and EDWIN A. MORRISON.—*Improvement in Grass Harvesters*.—Patented February 13, 1855. (Plates, p. 9.)

*Claim*.—Constructing the cutter teeth or blade and teeth, and the guard fingers, of three several plates of metal, V, W, V, all of similar form, and lying closely upon each other; the middle row of teeth being sharpened and stationary, while the upper and lower ones are vibrated for the purpose of causing whatever slipping there may be in gathering in the stalks to be cut, to come upon the fingers mainly, and thus protect the sharp edges of the cutters, as set forth.

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No. 12,463.—FISK RUSSELL.—*Improvement in Mowing Machines*.—Patented February 27, 1855. (Plates, p. 9.)

By arranging the wheel C with respect to the wheel B, as seen in the engravings; the wheel C is made to support the frame work near to the cutters, and it can be made of the same diameter as B, and the shaft E and cam-wheel F can be employed without any interference of wheel C with them.

The inventor says: I do not claim the supporting of the frame of a mowing machine on two or more wheels.

But I *claim*, when two wheels only are employed for the support of such frame, the specified arrangement of the secondary supporting wheel with respect to the main driving and supporting wheel and the driving shaft, such arrangement consisting in placing the axis of the secondary supporting wheel aside of and not in line with that of the primary wheel, and disposing the secondary wheel back of or on one side of the driving shaft, so as to operate essentially as described.

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No. 12,499.—JOHN H. MANNY.—*Improvement in Grain and Grass Harvesters*.—Patented March 6, 1855. (Plates, p. 9.)

The nature of this improvement will be plainly understood from the accompanying engravings.

*Claim*.—Supporting the stalks of grass or grain to be cut by means of rods or wires on one side of the sickle, while they are supported on the opposite side by means of the edges of the finger in the usual way, substantially as set forth.

Also, the construction of the shanks, or rear part of the fingers, in such form that the shanks will pass or overlap each other, and mutually support each other, and stiffen the finger bar, substantially as set forth.

Also, the manner described of connecting the rods to the fingers and to the cutter bar, and of adjusting them so as to support and brace the point of the finger with such degree of force as may be required, substantially as set forth.



No. 12,559.—FISK RUSSELL.—*Improvement in Mowing Machines*.—Patented March 20, 1855. (Plates, p. 10.)

The driving wheel has an internal gear *b*, into which engages the pinion D on driving shaft E.

The knives O have two holes *h*, equi-distant from the fulcrum *f*; the holes *h* receive the pins *k*, extending upwards from the slide-bar K. The knife can be reversed, when the other of the holes *h* will be fitted over pin *k*.

*Claim*.—Arranging the secondary supporting wheel C and the cutter frame in front of the driving shaft, when such driving shaft and the driving wheel are arranged and connected by gears as specified, the same serving to lessen the side draft of pressure on the horses, or draught animals, in comparison to what it would be, were the secondary wheel and the cutter frame disposed back of the driving shaft, when arranged with respect to the driving wheel, as specified.

Also, the combination of two knives, so that they shall project in opposite directions from one centre plate or bar, in order that either of the knives may be used in connection with the guard teeth, and either be made to serve as a lever to the other, whenever circumstances may require.

No. 12,570.—WALTER A. WOOD.—*Improvement in Grain and Grass Harvesters*.—Patented March 20, 1855. (Plates, p. 10.)

The conical shape of the wheel N is clearly shown in the top view, figure 2. The space between the line *x* (where the cutters end) and the side board Q, (next to the driver's seat and driving wheel, not shown in the figure,) is left for the reception of the bundles raked there from the platform by the operator.

The inventor says: I am aware that a conical track-clearer, separate and independent of the bearing wheel, has been used in mowing machines; this I do not claim.

But I claim making the inner face of the supporting wheel conical, for the purpose of clearing the track for the next or return swath of the machine, as described.

I do not claim a reserved space in general on the platform, between the end of the cutting point and the frame.

But I claim the forming of a quadrangular space on the platform, between the end of the cutting point and the frame of the machine, sufficient to hold as much grain as will make a bundle or sheaf, before it is raked from the machine, as described.

No. 12,584.—ANDREW DIETZ and JOHN G. DUNHAM.—*Improvements in Grain and Grass Harvesters*.—Patented March 27, 1855.—Ante-dated January 2, 1855. (Plates, p. 10.)

By this arrangement motion is directly transferred from the driving wheel to the cutter bar.

*Claim*.—First. Constructing the cams C and D upon driving wheel

A, of a length exactly corresponding to the cutting range of a single stroke of the knife during the advance and return of the cutter bar, substantially as and for the purpose set forth.

Second. The difference in the relative depths of the cams C and D, in combination with the linked levers B and *b*, arranged and operating substantially as set forth.

Third. Arranging the highest elevation of each cam upon the wheel A, at a point between the highest elevation and lowest depression of a cam upon the other side of the wheel, substantially as set forth.

No. 12,714.—JARVIS CASE.—*Improvement in Grain and Grass Harvesters*.—Patented April 17, 1855. (Plates, p. 10.)

The internal spur of the driving wheel A takes into spur wheel *c* on line shaft B, which latter carries on its other end the bevel wheel C, which last, by means of pinion *d*, operates the sickle bar J. The head iron N can be adjusted higher or lower, in vertical slideways *nn*, so as to adapt the sickle bar to a higher or lower cut. The anti-friction wheel *o* is pivoted in *o* to a bar P, which can also be adjusted in vertical slideways *pp*. A spring R rests against the bent top part of said bar P. The ends of the spring are attached by screws *r r'* to the main framing S. By more or less tightening the screws *r r'* the spring S can be made to bear more or less upon bar P, thereby causing the finger bar to bear on the ground with more or less weight, or none at all, if desired. The anti-friction wheel is to obviate side draught, and to relieve the finger bar from strain, as above stated. The arrangement of the line shaft, above the centre of the driving wheel, is intended—  
1. To produce a perfect balance of all the parts. 2. To have all the centres of the gearing in one plane with the axle of the driving shaft, without which it would be impossible to operate the sickle by means of eccentric *f* and sliding pinion shaft E, without destroying the adjustability of the head iron. 3. To give the anti-friction wheel the advantage of a large diameter, and to give sufficient vertical play to the adjustable head iron.

*Claim*.—1. Placing the line shaft directly above the vertical centre of the spur-gear of the master wheel, in the manner and for the purpose herein described; and,

2. The adjustable anti-friction wheel in combination with the spring R and adjustable set screws *r r'*, in the manner and for the purpose herein described.

No. 12,721.—ELIAKIM B. FORBUSH.—*Improvement in Grain and Grass Harvesters*.—Patented April 17, 1855. (Plates, p. 11.)

The gear key D is just large enough to sit astride shaft L *y*, and just thick enough to fill the space between the hub of the bevel wheel C and the outside journal box. It is held to its place by a projecting mortice on the key D *o*, and a tenon *a b* on the journal cap. By taking out this key D, the wheel C can be thrown out of gear.

The main platform timber S S (fig. 7) lies parallel with the finger-bar E B, and extends farther inwards towards the driving wheel A than the finger-bar, and connects with the main frame of the machine near the driving wheel, by means of the slotted hanger H. This arrangement is intended to bring much of the weight of the platform upon the driving wheel, and, on account of the connection to the finger-bar, to prevent, to a certain extent, the finger-bar and knives from bending or springing when cutting.

The upright part of clamp F e locks into the foundation or runner part F o at *n*, (figs. 2 and 9,) and, when the bolts *t r* are fastened, the finger-bar is held as in a vice, without bolts passing through it. The bottom of the runner F o has a slight rib *r s*, (figs. 8 and 9,) which rib becomes indented in the finger-bar, so as to prevent the finger-bar from slipping in the clamp, when in use, if by any cause the compression should become too slight to hold it securely.

A second angle is also made in the brace-bar *c r*, by which an opening is made behind the cutters, and between the brace-bar *c r* and the plate part *h m* of the guard (figs. 5, 8, and 1). This open work construction of the guards is to facilitate the escape of any fine grass, &c., which may be drawn in between the cutters and the guards. It is also intended to allow the brace-bars of the separate guards to come together, so that, when a full set of guards are on the finger-bar, they mutually brace and support each other, one of the outside guards bracing against the clamp, and the other against the outside shoe.

The inventor says: To the connecting rod and coupling boxes herein described I make no claim herein.

*Claim.*—1. I claim the combination of the gear key D with the gearing, substantially as set forth.

2. I claim the extension of the platform timber S S beyond the finger-bar, so as to connect it to the main frame of the machine near the driving wheel, with the view of giving strength and stiffness to the platform, and bring its weight as much as possible on the main frame near the driving wheel, substantially as herein set forth.

3. I claim, as improvements upon the clamp, the locks *n* and *r s*, substantially as herein described.

4. I claim the improvement of the second angle *c r* in the brace-bar of the guard finger, substantially as herein described.

No. 12,745.—PHILO SYLLA.—*Improvement in Grain and Grass Harvesters.*—Patented April 17, 1855. (Plates, p. 11.)

In this machine the sickle bar can be raised and lowered without inclining the guard fingers, but carry them level with the ground, in which position a sickle always cuts best, or at any given inclination, and at any desired height from the ground. Lever E is hinged at F to cross-bar A, and the front end of lever E is hinged in H to the rear edge of sickle-bar G. Lever I is pivoted in *a* to the rail D. The front end of lever I is hinged in J to the front edge of sickle bar G, at the corner diagonally opposite to hinge H, so that the sickle bar may be

raised or lowered without the guard fingers, fastened to the sickle-bar, changing materially the angle they form with the ground. The construction of the reel *o* with a journal *N* on one end, and a short driving shaft *Q* on the other end, and without a long central shaft, is apparent from the figure *s*. This arrangement is to do away with the difficulties attending central shafts, as the grain frequently gets wound around them, unless using very large reels.

*Claim.*—1. Hanging the sickle-stock *G* to the ends of the levers *E* and *I*, which carry it, by means of the hinges *H* and *J*, or their equivalents located at the diagonal corners of said stock, substantially as described, for the purposes set forth:

2. Making the reel with a journal at each end, and without a shaft through its centre, as described.

No. 12,766.—**JEARUM ATKINS.**—*Improvement in Platforms of Grain Harvesters.*—Patented April 24, 1855. (Plates, p. 12.)

The cut grain falls across the ribs *a* of platform *A*, leaving a small space between the straw and the surface of the platform. As the rake moves from position fig. 3 to position fig. 2, the rake passes around the straw; and the ribs serving to elevate the cut grain or straw from the surface of the platform, the teeth of the rake pass under the straw, and enable the rake effectually to gather the same.

*Claim.*—The bars or ribs, or their equivalent, on the platform of reapers in rear of the knife, in combination with a rake actuated by hand or by machinery, and moving above the platform; the ribs being either straight or curved, but parallel, or nearly so, to the travel of the teeth of the rake.

No. 12,768.—**ABNER WHITELEY.**—*Improvement in attaching Wheels to Harvesters and other machines.*—Patented April 24, 1855. (Plates, p. 12.)

To adjust the wheel *a* to different heights, the stud *e* of axle *b* is inserted into one of the holes 1, 2, 3, of bar *F*, and the nut *g* is screwed in, thereby forming an attachment, plainly represented in the fig. 3. The operator can effect this adjustment when standing outside of the machine, without any danger in case the team should start.

*Claim.*—The simultaneous attachment of the wheel *a* to or on the axle *b*, and the axle *b* to the plate *f*, by means of the bolt *g*, in combination, respectively, with the stud *e* and washer *c*, as described.

No. 12,769.—**ABNER WHITELEY.**—*Improvements in Harvesters.*—Patented April 24, 1855. (Plates, p. 12.)

The arrangement, referred to in the fifth claim, consists in furnishing the sickle-bar *h* with a groove *U* extending through the divider *Z*, and extending to the first finger *b*—for the end of the sickle to play out of the divider, and return in, so as to cut with a short sickle, and permit

the grain-wheel S to occupy the position described in the third and fourth claims.

The finger *a*, referred to in the sixth claim, serves to remove part of the grain that accumulates in the corner, to the next space to be cut.

The teeth *d* are formed, as indicated in the seventh claim, in order to retain the thickness of the plate and a close shear-edge. (See fig. 2.)

The alternate spaces *e* and *f* in the rear of the sickle-bar and teeth, (referred to in the eighth claim,) are for the purpose of permitting any grass or grain, that may accumulate on top of the teeth, to pass back and drop out; as while the bar rests against the shoulder of one finger, the space is open at the other: the sickle *h*, working obliquely in the fingers, is inclined to work all rubbish back, where it can drop out.

The cone *t* on knee-lever O (ninth claim) operates the lever Y to latch the rake K. Said lever O is provided with a slot to permit it to slide freely on shaft N, and, when moved by the knee to the right, it throws the end of lever Y out from the shaft N, lever Y being pivoted on M, and causes the end of lever Y to project far enough to catch the rake K, and retain it until lever O is removed to let the rake discharge the sheaf.

The guides R R, (tenth claim,) provided with springs on their outer sides, are for the rake K to return on after delivering the sheaf, and prevent it from swinging back and coming in contact with the falling grain, said guides closing in behind it after it has passed between them; thus it has to move up the rear of the guides, until it gets too high to catch the falling grain as it passes into the reel again.

These reel-rods L L<sup>1</sup> L are connected to shaft N by arms M M M, the fourth one is connected by angular arms E to shaft N. Reel-rod L<sup>1</sup> is made heavier than the others, in order to balance the rake K.

The inventor says: I am aware that grain has been reeled down, cut, carried over the platform, and discharged in a continuously straight line, *parallel to the line of draft*; and I am aware that curved and bent platforms, and platforms oblique, not only to the line of draft, but also to the reel and finger-bar, have been used to discharge the grain behind the master-wheel, or otherwise remove it from the standing grain.

But I *claim*, 1. The above described arrangement of reel L M, cutting apparatus and platform J, *all* oblique to the line of draft, or reel acting obliquely over any platform, or any other substantially equivalent device, whereby the grain is at once reeled down, cut, and conveyed over the platform in a *continuously straight line*, and at the same time delivered at a sufficient distance from the standing grain to permit the passage of the horses between it and the cut grain, when cutting the next swath.

2. So placing the reel, as above described, that the reel-rods will strike the grain, when they enter it, *outside* of the line *x y*, passing through the point of the divider Z, and parallel to the line of draft.

3. Placing the grain-wheel S in a plane intersecting the line of draft, so that it may deliver or counteract the side-draft, as above set forth.

4. Placing the axis of the grain-wheel (when so located in a plane intersecting the line of draft) in a plane Z Z, which passes vertically through the centre of the master-wheel A, so that it may, at the same time, give ease in turning at the corners, as above set forth.

5. The combination of the metal groove U and the sickle *h*, (the length of which is that of the cut of the machine,) for the purpose of enabling me to place the grain-wheel opposite the end of the sickle, and, at the same time, with its point of bearing on the ground, within the space cleared by the divider, as set forth and described.

6. The longer and divergent finger next to the divider, substantially as and for the purposes above set forth and described.

7. The sickle-tooth *d*, serrated on the smooth side and bevelled on the other, substantially as and for the purposes above set forth and described.

8. The alternate spaces in the rear of the sickle-bar and teeth, combined with the shoulders on the fingers, against which the sickle-bar works, for the purpose of alternating the bearings, as and for the purposes above set forth and described.

9. The cone *t* on the knee-lever O, substantially as described and for the purposes above set forth.

10. And, finally, disclaiming the broad device of guides to return the rake in a different path from that in which it advanced, I claim the combination of the rake K, swinging from one arm of the reel, with the spring-plate guides R, by which, when the rake has delivered the grain at the end of the platform, it is prevented from swinging back and coming in contact with the falling grain, as described.

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No. 12,824.—T. N. LUPTON.—*Improvement in Grain Harvesters*.—Patented May 8, 1855. (Plates, p. 13.)

The grass or standing grain passes between the upper fingers P and the lower fingers Q; and as the lower fingers are placed in a line between the upper fingers, and the edges of the two sets of fingers slightly overlap each other, the grass or grain is bent over and brought within the sweep of the revolving cutters *d*, and cut as shown in fig. 2. X is the reel.

The inventor says: I do not claim the endless R, nor the inclined apron S, as they have been previously used; nor do I claim the device for giving motion to the working parts, as that is common to the generality of harvesters.

But I do *claim*, the employment or use of the cutters *d*, placed on the rotating shaft M, in combination with the two sets of fingers P Q, the above parts being constructed, arranged, and operating in the manner and for the purpose as herein shown and described.

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No. 12,825.—JOHN H. MANNY.—*Improvement in Grass and Grain Harvesters*.—Patented May 8, 1855. (Plates, p. 13.)

An auxiliary divider Q, larger than the fixed divider F, is arranged on top of the latter and attached to it by a pin *c*, so that it can be

removed when desired. The small fixed divider is to be used without the auxiliary divider, wherever its size is adequate to the division of the grass or grain of moderate growth. Wherever the grain is lodged and entangled so that a wider separation of that which is to be cut from that which is to be left standing is necessary, the auxiliary divider is brought into use. The rear end of the upper horizontal part of the auxiliary divider abuts against the front end of the shield board *h*.

*Claim.*—The combination of a removeable auxiliary divider with a fixed divider, substantially as herein set forth.

No. 12,888.—BENJAMIN S. NICHOLSON, administrator of the estate of JOHN F. NICHOLSON, deceased.—*Improvement in Grain Harvesters.*—Patented May 15, 1855. (Plates, p. 13.)

The platform *K*, over which the cut grain passes, extends obliquely to the back corner of the frame, immediately behind the shafts *L*, for the animal to draw the machine by; thus the grain is deposited on the ground behind the machine, and in a line out of the track of the horse in its return.

*Claim.*—Making the space *K*, through which the grain passes, in the form of a rhombus, for the purpose of depositing the grain in a line, out of the track of the horse, as described.

No. 12,907.—JONATHAN HAINES.—*Improvement in Grain Harvesters.*—Patented May 22, 1855. (Plates, p. 13.)

The platform is connected with the finger bar by hinges *a*. By suspending the platform (by means of chain *G*) near the corner opposite to corner *H*, this latter will sink lower than the suspended one, and thus give a winding or sloping direction towards *H*, which is the point from which the grain is raked from the platform, and consequently facilitate the raking to that point. By extending the platform beyond the cutters next the driving wheel *D*, it admits of the gavel being first raked on to said extended point *D*, whence it is slid off immediately in the rear; the dragging platform having pressed down the stubble for the purpose, so that the gavel shall lie on top of the stubble.

*Claim.*—So hinging the platform *C* to the finger-bar *F* and frame *A*, as to facilitate the raking, break down the stubble, and leave the gavels in better condition to be gathered by the binders, substantially in the manner above set forth and described.

No. 12,963.—FRANCIS PEABODY.—*Improved Grain Harvester.*—Patented May 29, 1855. (Plates, p. 13.)

The horses are placed at the side of the driving wheel, to prevent the side drag; the cutter board *D* is attached to the bottom of the mould-board *H*; the parts which transfer the motion from the driving

wheel to the cutter bar (to wit, the friction rollers *d* sliding along the undulating side of the driving wheel) operate within the space enclosed by the mould-board, and are thus protected from being impeded by the grass already cut. The cutters can be raised or lowered by screwing or unscrewing the nut *m*, thereby depressing or elevating the rear end of the frame *B*; the spiral spring *i* serves to keep the end of frame *B* close up to the nut.

*Claim.*—Placing the horses at the side of the driving wheel, as described, when the cutters are placed in front thereof, in the manner and for the purpose set forth.

Second. I claim the mould-board *H*, in combination with the device employed for the purpose of vibrating the cutter bar, when this device is placed immediately behind the mould-board, and is connected with the cutter by attachments either to the centre or to both ends of the same, whereby a steadier motion of the cutter bar is produced, and the parts which transmit the motion from the driving wheel thereto are covered and protected from being clogged by the grass, in the manner set forth.

Third. I claim the described spring regulator, constructed and operating in the manner substantially as described, for the purpose of adjusting the distance of the knives from the ground, as set forth.

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No. 12,980.—COURTLAND WILSON and WM. MOORE, jr.—*Improvement in Mowing Machines*.—Patented May 29, 1855. (Plates, p. 13.)

One end of the cam lever *e* is furnished with clamps *i* and friction rollers *h*. The object of these clamps is to clasp the sides of the cam *p*. The stop *K*, when turned down, causes the clamps *i* to come nearly together and clasp the sides of the cam *p*. The springs *i* assist in fastening the clamps *i* in their places, when the stop *K* is turned down. In fig. 2<sup>d</sup>, the stop *K* is represented turned up, so as to allow the clamps to spread, so that they will not operate on the cam *p*. Fig. 1 represents the stop turned down.

*Claim.*—The application of the spring prongs or jaws *i* and clamp *K*, substantially as and for the purposes set forth.

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No. 12,999.—ANDREW DEITY and JNO. G. DUNHAM.—*Improvement in Reaping and Mowing Machines*.—Patented June 5, 1855. (Plates, p. 13.)

The inventors say: We are aware that the cutter bar has been worked by the action of cams on the surface of the driving wheel, by means of rollers set in levers, when such rollers clasp the wheel between them, as in our former patent of March 27, 1855, and also when the lever extends across the face of the wheel; but in the former case the mechanical arrangement is necessarily somewhat complicated, and in the latter case the great length of the levers, from their points or centre of oscillation, renders them liable to vibration, and tends to spread the machine, and thus interferes with and prevents the proper and effectual transmission of motion to the cutter bar, and an additional lever is also



necessary to connect the one extending across the face of the wheel with the cutter bar, thus complicating the whole arrangement; and we, therefore, do not now claim either of the above modes or ways of working the cutter bar.

But we *claim* the use, for the purpose of transferring motion from the driving-wheel to the cutter bar, of a short lever B, the centre of oscillation of which is over the cam flange itself; the rollers being but a cam and a half apart, or its equivalent, the whole arranged substantially as described. (See engravings.)

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No. 13,004.—M. G. HUBBARD.—*Improvements in Grain and Grass Harvesters*.—Patented June 4, 1855. (Plates, p. 13.)

As this machine has no bed for the cutter to slide on, the cutter bar must be made stronger than usual. It is made of angle iron, its back being bent upwards; against this back elevation the cutters *h* abut, and are held steady by a single bolt *i*, so as to be readily removed when necessary.

The inventor says: I *claim* the employment of the fingers to each knife or sickle blade, for the purpose of dividing the cutting force expended at each stroke of the cutter bar, and also preserving more perfectly the cutters from injury, by keeping stones, &c., from coming in contact therewith.

I do not claim the general device of making bars of angle iron, for the purpose of lightness and rigidity; but the making the cutter bar of angle iron, for the purpose of attaining at the same time both the above advantages, and a shoulder against which to abut the knives, so that a single hold to each will securely hold them, substantially as and for the purpose set forth.

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No. 13,102.—JOHN RICHARDSON.—*Improvement in Producing Intermittent Acceleration of Motion in Harvester Rakes, &c.*—Patented June 19, 1855. (Plates, p. 14.)

When the projection *a* on drum H passes beyond the contact with the wheel V, the drum H and chain-wheel J (which transmits motion to the crank shaft L actuating the rake) are driven with the ordinary velocity of the shaft F, by means of the rack and pawl I *b*. But when the projection *a* meets the wheel V, (having an India rubber or similar yielding periphery,) the pawl slips over the ratchet; and the drum, ratchet, and chain-wheel being then loose on shaft F, they are free to turn with a velocity due to the circumference of the wheel V.

The inventor says: I am aware that an accelerated motion has been given to grain rakes or harvesting machines; this I do not claim.

But I *claim* a device for producing an accelerated motion, whether in rakes or for other purposes, said device consisting of the cam *a* on the drum H, and the latch and pawl I *b*, and friction wheel V, arranged and operating substantially as set forth.

No. 13,147.—STEPHEN HULL.—*Improvement in Attaching the Raker's Seat to Harvesters.*—Patented June 26, 1855.

The raker's seat is fastened on the bar *g*, near the inside of frame *k*, for the purpose of causing the weight of the raker to rest as much as possible on the frame *k*, outside of the driving wheel, for the purpose of relieving the cutters or finger bar of all unnecessary weight. The platform *i* rests on said bar *g*.

The inventor says: I do not claim to be the original inventor of the raker's seat, nor of any of the different parts of the machine, irrespective of the manner in which they are combined and fastened together.

But I *claim* the placing or fastening of the raker's seat on the bar *g*, by means of a bar of iron or steel, or any other equivalent device, near the inside of the main frame, in such a manner that the weight of the raker, when on his seat, will rest on the bar, substantially as set forth.

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No. 13,149.—JOHN H. MANNY.—*Improvement in the Cutters of Harvesters.*—Patented June 26, 1855. (Plates, p. 14.)

A series of angular notches *b* are formed on the under side of the sickle at its rear edge; the side 1 of each notch is inclined at an angle of about twenty degrees to the side of the sickle; and the side 2 of the notch is at right angles to the sides of the sickle. While the blade is vibrating in one direction, the inclined side of the notch will tend to rise upon and pass over a fibre or other obstruction, while on its vibration back in the opposite direction, the vertical or square side of the notch will catch and pull along the fibre entangled upon the finger; in this way the fibres that tend to entangle the blade and guard fingers are kept constantly moving along until they are carried out by the motion of the sickle. The clearing hook *c*, at each end of the sickle, draws out and discharges the fibres from the apertures which form the bearings for the end of the sickle in the divider and guards, and thus prevent the clogging of the ends of the sickle.

*Claim.*—Constructing the cutters of harvesters with clearing notches, of the form described.

Also, the combination of clearing hooks with the cutters of harvesters, substantially as set forth.

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No. 13,150.—JOHN H. MANNY.—*Improvement in the Guard-Fingers of Harvesters.*—Patented June 26, 1855. (Plates, p. 14.)

The neck of the lower part of the guard finger is placed obliquely, in order to diminish the tendency of grass, &c., to lodge. The engravings represent a bottom view of the fingers.

*Claim.*—Forming the fingers with an oblique neck *c*, arranged substantially in the manner and for the purpose set forth.

No. 13,159.—GARDNER A. BRUCE.—*Improvement in Harvester Reels.*—Patented July 3, 1855.

The bars *b* of the reel, in consequence of swinging on pivots *c*, enter or descend into the grass vertically, and yield in a measure during the action upon it.

I *claim* constructing the bars *b* of the reel *E* as shown, viz: having the pivots *c* at the end of said bars placed at the edges of the ends, and fitted loosely in holes at the ends of the radial arms *d*, so that the bars may, by their own gravity, remain in a vertical position as the reel rotates, for the purpose as set forth.

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No. 13,160.—SYLVESTER COLBURN.—*Improvement in Grain and Grass Harvesters.*—Patented July 3, 1855. (Plates, p. 14.)

The cutters *D* work between the plates *h* and the under surface of *a*. The springs *g* keep the upper edges of the plates *h* in contact with the edges of the cutters, and thus prevent clogging and keep the cutters sharp.

I *claim* the employment of the elastic plates *h*, fitted within the fingers *B*, and acted upon by springs *g*, arranged substantially as shown, for the purpose set forth.

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No. 13,173.—WM. H. HOVEY.—*Improvement in Grain and Grass Harvesters.*—Patented July 3, 1855. (Plates, p. 14.)

When the sickle bar *E* receives a reciprocating motion, and the cutters *f* work on the pivots *g*, the edges of the cutters act against the edges of the plates *d* and cut similar to shears, while the clearers *i* work in the recesses *c*, in consequence of their bar *F* being attached to the cutters by the pivot *j*. The clearers keep the recesses *c* free from grass, and prevent the choking or clogging of the sickle. The two sectional figures are on a larger scale than the plan.

*Claim.*—The employment of the "clearers" *i* attached to the bar *F*, and working in the recesses *c* of the fingers *b*, for the purpose of preventing the choking or clogging of the sickle as shown; the bar *F* being connected to one or more of the cutters *f* by pivots *j*, by which motion is communicated to them.

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No. 13,176.—JAMES LITTLE and WYLIE LITTLE.—*Improvement in attaching the Connecting-Bar to the Cutters of Harvesters.*—Patented July 3, 1855. (Plates, p. 14.)

*Claim.*—Connecting the pitman or connecting rod *G* to the sickle bar *F*, by means of the cylindrical projection *i* on the end of said bar, and the loop *j* at the end of the connecting rod, as shown; whereby the pitman may be readily connected to, and detached from, the bar *F*, and at the same time a durable connection or attachment of the bar and pitman obtained.

No. 13,181.—SAMUEL ROCKAFELLOW.—*Improvement in Mowing Machines*.—Patented July 3, 1855. (Plates, p. 14.)

By operating the arm S, the lever Q will raise or depress the side piece *a*, and also the finger bar K and cutters attached to it. Arm S may be secured at any desired point by pawl V, the lower end of which bears upon segment guides V V, on the frame A of the machine.

*Claim*.—Raising and depressing the finger bar K, and consequently the cutters *e f*, by means of the vertical bars M M, having wheels O O at their lower ends, arm P, attached to the cross-piece N of the bars M M, lever O and shaft R, with its arm S attached. The above parts being arranged substantially as shown and described.

No. 13,205.—JONATHAN F. BARRETT.—*Improved Method of Raising and Lowering the Cutters of Harvesters*.—Patented July 10, 1855. (Plates, p. 14.)

When it is desirable to raise the cutters above the ground, the driver (sitting on seat I) depresses with his foot rod *h f*, thereby lifting the front end of lever M, and elevating the cutter bar K.

*Claim*.—Connecting the front of the frame with a lever M, arranged and operated substantially as set forth, for effecting the elevation of the cutters for the passage of obstacles, by the driver's foot, as specified.

No. 13,226.—ISAAC IRVINE HITE, assignor to WASHINGTON F. PAGETT.—*Improvement in Harvesters*.—Patented July 10, 1855. (Plates, p. 14.)

The raker, instead of walking alongside of the machine, takes his place in or on the stand or seat B, which is attached to the harvesting machine at the rear edge of the platform A.

*Claim*.—The combination of a raker's seat or stand with McCormick's machine for cutting grain and gathering it upon a platform.

No. 13,246.—ABNER WHITELEY.—*Improvements in Grain and Grass Harvesters*.—Patented July 10, 1855. (Plates, p. 15.)

For mowing, one (*u*) of the two bolts that connect the tongue *a* to the frame C is taken out, thus constituting the other bolt a fulcrum or joint for the tongue and frame to turn about. By moving lever *f* into any one of the notches of plate *e*, (the shaft of wheel A being the fulcrum on which frame-lever *c* works, and the frame-lever *c* being fastened to the front end of frame C by link *g*,) the front edge of the finger bar H, which carries the fingers and cutters, can be raised or lowered, and thus the angle of the cut be changed, while the team is in motion.

To adapt the machine to reaping, the bolt *u* is to be thrown in, thereby forming a stiff connection between tongue and frame, which

will allow the wheel A to ascend or descend without affecting the finger bar and cutters; the heads of the boxes *t* of the wheel A playing up and down in the slots in the plates S, to suit the unevenness of the ground. The circular part of said slots retains the cog-wheel *o* in gear with the pinion; but when the frame is so elevated as to cause the heads of the boxes *t* to pass into the reverse part of said slots, then the pinion will be thrown out of gear.

The inventor says: I *claim*, first. So constructing the machine, that when the joint between the tongue and frame is flexible, the latter may, while the team is in motion, be raised and lowered in a sector of a circle whose centre is the finger bar, and thereby enable the operator at once to change the angle of cut; and this I claim, irrespective of the mechanical device by which the motion is produced.

Second. The frame-lever *c c*, provided with means of fixing its position at will, and linked, as described, to the main frame C C, in combination with the guiding slotted plate S S, as a means, when used with the flexible joint between the tongue and frame (for mowing) of oscillating the frame about the finger bar as a centre, and thus varying the angle of cut; and when used with a rigid joint, (for reaping,) of raising and depressing the frame and finger bar.

Third. The combination with the links *g g* of the receding curve in the bottom of the slots in plates S S, in which the axis of the driving-wheel plays, or of their equivalents respectively; for the purpose of enabling the driver to throw the cutter pinion out of gear, substantially as described.

Fourth. Suspending the main frame C C and its attachments from the driving shaft, substantially in the manner set forth and described; in order that, whether used in reaping or mowing, the driving-wheel and the finger bar may be independently adjustable, and the wheel may rise over obstructions, or descend into depressions, without altering the angle of cut, or otherwise affecting the cutters.

No. 13,285.—DAVID WATSON.—*Improvement in Harvesters*.—Patented July 17, 1855. (Plates, p. 15.)

Figure 1 represents a plan of the machine. *l* is the cutter reciprocating between the fingers *m*, the arrow indicating the line of motion of the harvester. This oblique arrangement of the cutters allows them to be much longer than when arranged at right angles with the line of motion for the same width of cut. Consequently, each finger has to gather a less quantity of straw, which is then severed with greater ease.

The inventor says: I do not claim the diagonal arrangement of a series of rotary cutters, or the diagonal cut of a certain portion of one or more rotary cutters.

But I *claim* the arrangement of a reciprocating cutter or cutters, diagonally to the line of motion of the machine, substantially as specified.

No. 13,330.—JESSE URMY.—*Improvements in Grain and Grass Harvesters*.—Patented July 24, 1855. (Plates, p. 15.)

By raising or lowering the pinion *r* so as to make it gear with one of the ranges *p* of cogs on driving wheel C, the revolutions of the vertical shaft of *r*, and, consequently, the reciprocations of the rake R, (connected to said shaft by a rod *m* and eccentric arm *n*,) will be more or less rapid. The dividing board *f* is horizontally hinged so that its inner edge can be more or less turned from a vertical towards a horizontal position, thereby gathering the grain more or less closely.

The inventor says: First, in combination with the driving wheel placed inside the gearing as described, I *claim* the angular tongue *i* for preventing side draught, and at the same time allowing the horses to walk on the side of the standing grass or grain.

2d. The described use of the balanced dogs *b'* *b'*, under the driver's feet, for throwing the cutting apparatus in and out of gear.

3d. Making the parting and gathering board *f* hinged and adjustable, as set forth.

4th. Regulating the size of the shears by means of the several ranges of gearing *pp* within the driving wheel, in combination with the adjustable pinion, as set forth.

No. 13,433.—ROBERT J. MORRISON.—*Improvement in the Cutting Apparatus of Harvesters*.—Patented August 14, 1855. (Plates, p. 15.)

The lids *d*, resting upon the moving cutting blades *b*, remove all accumulations thereon, and rise and fall independently of each other.

*Claim*.—The hinging of the lids and allowing them to rest, severally and independently, upon the moving cutters, in the manner and for the purpose substantially as set forth.

No. 13,438.—FISK RUSSELL.—*Improvement in Harvesters*.—Patented August 14, 1855. (Plates, p. 15.)

The front end of lever G works the knives, while the rear end carries a fork I, that is free to turn in the end of the lever, and embraces the serpentine edge of the cam wheel F, and supports two friction rollers, between which the cam edge works.

*Claim*.—So arranging the rocker frame I that it may rotate in the end of the lever G, while said rocker frame is operated upon by the serpentine cam wheel, which it embraces, essentially as specified.

No. 13,480.—CHARLES BRADFIELD.—*Improvement in Harvesters*.—Patented August 21, 1855. (Plates, p. 15.)

The cutters are hung immediately underneath the axle, and receive their vibrating motion by means of bent lever K, pitman *j*, and crank *i*, on shaft 2, which latter receives rotary motion from pulley D, (on main driving shaft,) by means of friction band *g*.

*Claim.*—The arrangement of the pulleys D E  $\hat{f}$  on and near the axle, and the finger and cutter bar underneath the axle, when the cutters are operated from said pulleys, through the intervention of the endless belt g, cranks, pitman, and connecting rod, as set forth.

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No. 13,504.—ROBERT BEANS.—*Improvement in the Mechanism for changing Harvesters from Reapers to Mowers, &c.*—Patented August 28, 1855. (Plates, p. 15.)

The cutting knife is attached to the lower end of lever o. A connecting rod P passes from the crank to the upper part of lever o, and, by attaching it at a greater or less distance from the centre, the operator will be enabled to give the cutting knife more or less sweep.

*Claim.*—The combination of the lever o and connecting rod P, with any means of altering the height of the frame above the cutter-bar, for the purpose of retaining the same relations between the stroke of the knives and the teeth or fingers, although the distance between the head of the cutter-bar and the crank be varied in so doing, as set forth.

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No. 13,508.—JOHN THOMPSON.—*Improvement in Grain and Grass Harvesters.*—Patented August 28, 1855. (Plates, p. 15.)

The axle b is extended across the machine at such height that the grain or grass may be gathered and discharged under the axle. The large wheels are intended to render the draft easy, especially in rough land.

I claim discharging the grain from the platform, between the platform and the driving-wheel, and under its axle, when the same is done in connexion with a pair of wheels whose axle extends across the machine, as described.

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No. 13,512.—HENRY WATERMAN.—*Improvement in Reaping and Mowing Machines.*—Patented August 28, 1855. (Plates, p. 16.)

The cutter-bar is connected at each end by pivot-joints to arms a a, which vibrate about fixed centres b; thus the cutters receive an advancing and retreating curvilinear motion, which secures the advantage of a draw-cut, and keeps the spaces clear between the knives and the fingers. When sticks, or the like obstructions, get between the fingers and knives, the spring of the fingers admits of their being easily dragged out by the retreating motion of the knife.

During the operation of the machine the grain accumulates upon the lowermost cradle of the reel p, and when a sufficient gavel is attained, the driver depresses the check-pin t, so as to allow the reel to revolve, when the weight of the gavel will cause the reel to make part of a revolution, and the gavel drops upon the field. As the grain is laid across the swath it is turned, so as to lie in the direction of the swath, and be out of the way of the horses, by means of a deflector,

which is composed of a flexible strip  $a^1$  of metal and of a side C, made in sections free of each other, so as to accommodate the flexure of strip  $a^1$  as it passes over irregularities upon the surface of the field.

The inventor says: I do not claim the advancing and retreating curvilinear motion of the cutter-bar.

But I *claim* the combination of the two sets of knives described, with the curvilinear motion of the cutter-bar.

I *claim* the elastic fingers, in combination with the curvilinear motion of the cutter-bar.

I *claim* collecting and depositing the grain by the revolving cradles, by the weight of the grain laid upon them by the reel.

No. 13,517.—COLLINS B. BROWN.—*Improvement in Mowing Machines*.—Patented September 4, 1855. (Plates, p. 16.)

The bolts  $j j$  prevent any lateral play between the finger-bar F and bar D, and the screws  $k$  prevent vertical play. By constructing the frame B of two metallic side-pieces, and attaching the bar D and draught-pole to the lower end of the frame, a strong and simple framing is obtained.

Figure 3 represents a section, on an enlarged scale, of the connexion between D and F.

I *claim*, first, attaching the finger-bar F to the bar D of the frame, by means of the plates  $i i$  placed each side of the bars near their ends, which overlap each other, the plates being bound or pressed against the sides of the bars, by means of screw-bolts  $j j$ , which pass between the two bars,—the ends of the bars having screws or screw-bolts  $k k$  passing vertically through them.

2d. I *claim* constructing the frame of the machine of two metallic sides  $d d^1$ , between which the driving-wheel A is placed, and attaching the bar D to the lower ends of said side-pieces; and also the draught-pole or tongue E, as shown.

No. 13,523.—JONATHAN HAINES.—*Improvement in Grass Harvesters*.—Patented September 4, 1855. (Plates, p. 16.)

The nature of this invention will be understood from the claims and engraving.

The inventor says: Adjustable seats, or seats that can be adjusted, have been used; but to do this the machine must be stopped, and the adjustment when made is permanent: this I do not claim.

But I *claim*, first, the hanging of the cutter bar to the main frame by means of the longitudinal  $k$  and transverse rods  $m$ , so that said cutter bar may be free to rise and fall to the undulations of the ground, while it is prevented from all lateral motion.

I also claim the use of a driver's seat when mounted on ways or rails, so that the driver can, at pleasure, throw his weight forward or backward, to aid in balancing or relieving the cutters, as the variable character of the ground or condition of the grass may require.



No. 13,524.—A. E. KROGER.—*Improvement in Harvesters*.—Patented September 4, 1855. (Plates, p. 16.)

As the finger bar is attached to the lower ends of the rods *c c*, which are allowed to slide in holes in the front bar *a* of frame A, and as these rods are encompassed by springs *d<sup>1</sup>*, either end of the finger bar and sickle may be raised, according to which end of the finger bar may meet with an obstruction.

I *claim*, attaching the finger bar D to the front bar *a* of the frame A, by means of the rods *c c*, which slide through the ends of the bar *a*. The rods *c c* being encompassed by springs *d<sup>1</sup> d<sup>1</sup>*, as shown.

No. 13,545.—JOHN E. HEATH.—*Improvement in Harvesting Machines*.—Patented September 11, 1855. (Plates, p. 16.)

The friction roller *m* on cutter bar *n* is operated by the cam-groove in the driving wheel *f*, so as to give the cutter bar (which is hung in stirrups *q r*) a reciprocating motion. The roller *m* turns loosely on a pivot projecting from the cutter bar, at an angle of about 45 degrees. The bar *x* presses upon the upper sides of the teeth *t*, which are immediately above the fingers *u*. Bent arms *w* extend backward from bar *x*, and are fastened to the frame *e* by set-screws. By means of these set-screws the pressure between the fingers and teeth can be regulated.

I *claim*, first, suspending the reciprocating bar *n* by means of the stirrups *q* and *r*, near the ground, in front of or behind the driving wheel, in or near the same plane as the finger board, in combination with the angular friction roller, the whole being arranged and operated in the manner and for the purpose set forth.

Second. The adjustable pressure bar *x*, constructed and arranged as described, in combination with the cutter teeth *t* and fingers *u*, for the purpose specified.

No. 13,565.—WM. BURGESS.—*Improvement in Mowing and Reaping Machines*.—Patented September 18, 1855. Patented in England, August 16, 1854. (Plates, p. 16.)

This invention consists in applying one or more Archimedean screws A to the platform, or other convenient part of reaping and mowing machines, for the purpose of delivering the cut crop to the side of the machine, motion being communicated to such screws from some running part of the machine.

The inventor says: I am aware that a "spiral or screw" has been employed for the purpose of clearing the track, in order that the wheels may operate upon the ground; and I make no claim to such a device.

But I *claim* as my improvement, in addition to reaping or mowing machines, combining the Archimedean screws with the platform thereof for the purpose of delivering the cut crop off from the same, substantially in the manner as described.

No. 13,828.—JOHN REILY.—*Improvement in Harvesting Machine*.—Patented November 20, 1855. (Plates, p. 17.)

The cutter guard G has a slot *h* moveable upon pin *l*, so that the guard may be drawn back by the operator on seat S' during the turning of the machine to prevent the beating down of the standing grain. Spring *n* causes the protrusion of said guard when rod *m* is released.

The grain guard consists of an oblique standard *p*, to the lower portion of which is jointed arm Q, having a tendency towards the standard by reason of a spring *q*. To the upper end of arm Q is jointed the handle *s* of guard board *t*. As the raker leans forward to remove the grain from the platform, his foot pressing upon stud *r* on arm Q, the grain guard board *t* is thrown forward in the position shown in fig 2. During the raking, the newly cut grain falls against board *t*, as shown in dotted lines in fig 2. As the raker rises after clearing the platform, the spring *q* carries the board *t* into position of fig. 1, the grain resting on it falling upon the platform. In this manner the falling grain does not interfere with the rake.

*Claim*.—First, the retracting guard G, in combination with the spring *n* and rod *m*, when constructed, arranged, and operated from the raker's seat, in the manner and for the purposes specified, and not otherwise.

Also, the grain guard P, when constructed, arranged, and operated in the manner and for the purposes specified, and not otherwise.

No. 13,933.—JOHN W. HAGGARD and GEORGE BULL, assignors to GEORGE BULL, JOHN W. HAGGARD, and ANDREW NEWSTETER.—*Improvement in Harvester Rakers*.—Patented December 11, 1855. (Plates, p. 17.)

Belts H K passing over pulleys N N and over shaft F, receives motion from the latter. O is a platform for the support of the falling grain. The plate T is attached to both belts, and bar J slides in open brackets upon plate T. The rake teeth for collecting the grains project from bar J. Pin R prevents J from performing but a part of a revolution, and spring I presses bar J into slot V; so that when the belts are reversed in motion, the pin Z is brought under the edge of the frame plate O' at V, thus giving to J a part of a revolution, so as to incline the rake teeth S to nearly a horizontal position, until the belts have passed to the opposite end at V, when, by means of spring I, the rake bar J and teeth resume their vertical position for raking.

*Claim*.—The plate O' having its inclined and parallel planes on the same sides, in combination with the pin Z, bar J, spring I, and pin R, the whole being constructed, arranged, and operating, as described.

No. 12,269.—GEO. A. BROWN.—*Hay-Making Machine*.—Patented January 23, 1855. (Plates, p. 17.)

The spur gear *j* on the driving wheels gear into pinions *a* on each end of the picker shaft *c*, thus directly transmitting the motion from the

driving shaft to the picker. The pinions are so arranged with a dog *c* and a ratchet wheel *b* (keyed to the picker), that in turning about when only one driving wheel revolves, the dog may be raised to let the pinion turn loose without acting on the picker.

*Claim.*—The construction of a machine in manner and form as described, or in any other manner or form substantially the same, applying the power directly from the driving wheels to the spreading apparatus, thus saving the loss of power caused by friction in a series of wheels, using coiled or spring teeth, and the application of such machine to the purpose of spreading and turning hay.

No. 12,728.—FRANCIS PEABODY.—*Hay-Making Machine*.—Patented April 17, 1855. (Plates, p. 17.)

The end pieces *B* of the horizontal rake *C* form runners, which slide upon the ground and guide the rake. The rake-fingers *C*, etc., gather up the mown grass, and present it to the revolving scatterer *H*. The scatterer has a rapid revolving motion, opposite to the motion of the rake, as is apparent from figure 3; and thereby the grass is all thrown behind the machine, where it distributes itself evenly over the ground. The central driving wheel, in combination with the runners, is to allow the machine to be easily turned in any direction; and the runners being tilted up by any obstruction in the ground, will thereby protect the fingers against being broken.

*Claim.*—1. The within described machine for making hay, consisting essentially of the rake for gathering the grass, in combination with the revolving scatterer, constructed and operating in the manner substantially as herein described.

2. Revolving the scatterer in a direction contrary to that in which the machine moves, for the purpose herein set forth.

3. The employment of a single wheel to carry and actuate the hay-maker, when this wheel is placed in the centre of the machine, in the manner and for the purpose set forth.

No. 13,908.—JOHN K. HARRIS.—*Improvement in Machines for Raking and Loading Hay*.—Patented December 11, 1855. (Plates, p. 18.)

The crank *s t*, in its revolution, will come in contact with the long end of lever *m*, and, by elevating it, will cause the forks *K* to assume the position shown in broken lines. The hay, previously gathered by the forks in their passage through the rake-teeth *E*, will now be lifted from the ground, and clasped firmly against the front tie-piece *h* and wires *q*. The continued motion of the crank will then cause the pitcher frame *g* to be elevated until it acquires a vertical position, when lever *m* will be tangential to the circle described by the crank. The further motion of the elevator being now resisted by spring *y*, the crank will pass the fulcrum *l* of lever *m*, and, by pressing against the opposite end, will cause the forks *K* to fly back, (see position indicated by dotted

lines), thus discharging the hay on the wagon. The crank being now disengaged from lever *m*, the elevator will descend until lever *m* is caught by the stirrup *z*, when the forks *K* are suddenly forced through the spaces between the rake-teeth so as to gather the hay. The above described operation will then commence again.

The inventor says: I do not claim any form of attachment to the wagon, or the manner of forming the spring of the rake-teeth, or any continued endless belt motion, with an ordinary rake attached behind, to save the hay, passed over by the endless belt elevator.

But I *claim* the pitcher or elevator, in combination with the rake, for the purpose of taking the hay from the rake in regular successive intervals of time, and in separate parcels, and elevating and delivering it on the wagon, substantially in the manner and for the purpose as described.

No. 13,460.—JOHN LOCKE HARDEMAN.—*Improvement in Hemp Cutters*.—Patented August 21, 1855. (Plates, p. 18.)

The hemp is sustained and brought up against the scythes *b* by the curved arms *m* of the horizontal reel. The arm *a* extends from the frame, and supports the bars to which the scythes are attached by hinges *c*. The sides of the scythes are turned up so as to form the support of the blades. By thus having the scythes hinged to the arm, they can readily be taken off for the purpose of sharpening the blades. A curved guard *f* is affixed to the under side of the scythes, so as to prevent the blades from entering the ground.

The engraving represents a top view of the machine.

*Claim*.—1. The side reel, constructed and applied for hemp, grain, or other articles of like nature, such reel having curved arms, be the curvature more or less.

2. The cleaning shears, substantially as described.

No. 12,374.—THOMAS D. AYLSWORTH.—*Improvement in Hop Frames*.—Patented February 13, 1855. (Plates, p. 18.)

These frames are so arranged, that the portions upon which the vine entwines may be loosened at their upper ends, and taken or laid down to gather the product, and then returned to their proper positions on the frames with great facility.

Near the top of the training cords there is an inverted cup-shaped piece *d*, concave on its lower surface, for the purpose of turning downward the top of the vine when it reaches that point, to prevent it from entwining the supporting wires *c*, in which case the cord *D* could not readily be unhooked and taken down.

The inventor says: I do not claim the training of hop or other vines on wires or cords, as this has been done before.

But I *claim*, in combination with the permanently arranged supporting cord or wire *C*, the training cords or wires *D*, leading from the ground to said supporting wire, and connected thereto by a spring

hook, or its equivalent, so as to be readily connected to, or detached from, the supporting wire, for the purpose and in the manner set forth.

I also claim, in combination with the training cord D, the inverted cup *d*, for turning down the top of the vine, and preventing it from entwining the supporting wire, substantially as set forth.

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No. 12,610.—JOSEPH WALKER.—*Improvement in Hulling Cotton Seed*.—Patented March 27, 1855. Patented in England, July 20, 1854. (Plates, p. 18.)

The construction of the concave D, and how it can be adjusted by set-screws E G, so as to suit seeds of different sizes, will be understood from the engravings.

*Claim*.—Supporting and adjusting the concave bed by means of grooves cut within, or other equivalent devices affixed to the side frame, in such manner that the side concave shall be eccentric to the axis of the hulling cylinder, for the purpose specified.

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No. 12,908.—C. B. HORTON.—*Improvement in Hullers of Buckwheat*.—Patented May 22, 1855. (Plates, p. 18.)

The grain enters the stones by spout M, and, after having been hulled between them, passes through inclined spout O into suction pipe I, where the current of air created by fan *j* carries the hulls, dust, and lighter grain, in the direction of the arrows, while the hulled grain falls down by its own gravity. The light grain will finally pass out at Q, and the chaff, etc., at R.

The inventor says: I am aware that conical stones have been used for the grinding of grain; therefore, I do not claim that as my invention.

But I do *claim*, the arrangement and combination of the fan *j j j j* with the suction spout I I, the discharge openings R Q, and the stones B and C, substantially in the manner and for the purposes set forth.

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No. 13,556.—WILLIAM WILBER.—*Improvement in Cotton-Seed Hullers*.—Patented September 11, 1855. (Plates, p. 18.)

The rollers D E and breast plate F serve to carry and chaff the seed; the seed is then crushed between cylinder G and concave H, and breastplate J, which latter, when worn out, can be removed and replaced by another; the material is then mangled and loosened up by the teeth *c d*, and beaters *b*, on cylinder L, and then comes on to the screens. The various screens are graduated as to their meshes, and have a vibrating motion. The first blast coming from fan R is light, and acts through the fine screen *e*, and carries off light matter. The agitation of the screens is all the while sifting the pure from the impure particles, and allows the latter to pass through the screens into proper recep-

tacles below. The heavier portions pass along the inclined screens until they are acted upon by the more powerful blast from fan-blower T, the blast passing up through screens *i* and *f*. The pure material drops down on to the chute V, and the impure or mixed pass onward to be operated upon by a third still more powerful blast from a fan W, (not represented in the engraving,) the pure material dropping on to chute X, whilst the lighter portions are blown out at the side of the machine; the last blast acting across the way of the material.

*Claim.*—The arrangement of the hopper B, revolving toothed cylinders D E, breastplate F, crushing and grinding cylinder G, concave bed H, with removable extended bed-plate J, and toothed cylinder L, revolving in its toothed case K<sup>1</sup>, in the manner and for the purpose set forth.

I also claim the series of graduated blasts R T W, and screens *e f g h i j k*, for the purpose of separating the oleaginous from the other impurities of the seeds, they being arranged and operating substantially in the manner and for the purpose set forth.

No. 13,713.—ROBERT ANDERSON and JOHN E. ANDERSON.—*Improvement in Rice-Hulling Machines.*—Patented October 30, 1855. (Plates, p. 19.)

To the supports D are secured (by means of adjusting screws E) ribs F, to the underside of which ribs are secured strips of India rubber G, which will afford an elastic pressure to the rice in passing between the ribbed surface of the hulling cylinder B, and the India rubber surfaces. Springs may be adjusted around the set screws E, so that as the set screws are drawn back, the springs lift the rubbers.

The inventors say: We are aware that India rubber has been applied in hulling machines, and that segmental concaves, supported by spiral springs, are well known in this class of machines; also, that it is common to apply adjusting screws to the concave, when constructed in one piece; we do not claim either of these features.

But we *claim* the adjustable segmental concave, faced with India rubber, in combination with the spiral springs, and a ratchet-faced hulling cylinder, in the manner described for the purpose specified.

No. 13,992.—CHARLES MILLER.—*Improvement in Hulling Machines.*—Patented December 25, 1855. (Plates, p. 19.)

This improvement consists in providing an ordinary clover-seed huller, with adjusting slides *c d*, by means of which the seed can be retained in or discharged from the machine at the option of the operator, so as to avoid running the seed more than once through the machine; which is frequently the case in other hullers when the seed is damp.

Figure 1 represents a longitudinal, and figure 2 a cross section of the machine, the hulling cylinder B being removed in the latter figure, so as to show the slides *c d*, which can be drawn out (see position in dotted lines) by means of rods F F.

*Claim.*—The application of the block *e e*, and adjustable slides *c, d*, by means of which the machine can be regulated so as to retain the seed in the huller, until it is perfectly shelled.

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No. 12,508.—H. LUDINGTON and S. R. LUPTON.—*Improvement in Lime Spreaders and Seed Planters.*—Patented March 13, 1855. (Plates, p. 19.)

A supply of compost is put into the reservoir C, and the fountain G is filled with lime or compost, and the machine being set in motion, the cylinder and spike shaft revolve; the lime, in a pulverized form, passes off through the bottom of the expanding sectional hopper, and is distributed over the soil. When lumpy portions of the compost have accumulated on the grating, it can be elevated by means of cord *i*, into the position represented in figure 1, when the lumps will fall to the ground.

The inventors say: We claim the construction of an expanding sectional hopper E E hung by hinges or otherwise pendent, and formed with concaves on the inner sides, which concaves have formed thereon diagonally arranged ridges or sloping irregularities *a a a a a*, substantially as described.

Second. We claim the construction of a drum cylinder or roller F F, with series of ridges or sloping irregularities *p p p*, formed or arranged diagonally across its circumference or periphery, together with longitudinal troughs or gutters *s s s s*, at intervals between the ridges as shown. This cylinder being also combined in action or operation with the hopper E E and the revolving spike shaft H, as set forth.

Third. We are aware that there are such devices as tilting-tables, dumping-beds and cart bodies, and sloping or sliding planes, for the purpose of precipitation; none of these, however, do we claim, as they are not equivalent forms of construction to ours, for they do not embrace the two-fold principles of our device; nor is it a fixed sieve or permanently arranged grating that we claim; but, instead, we claim constructing a feeding or supply fountain, having the combination of adjustable hinged frame grating, actuated by cords or equivalents, and to answer the two-fold purpose of holding the compost mass, and preventing the escape of lumps, &c., and admitting also of being elevated or depressed, or thrown forward at pleasure, for the purpose of relieving the grating and hopper or fountain of lumps and other obstructions, in the manner and for the purpose set forth.

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No. 12,480.—RENE CHAS. DEMOLON and GEO. ALEX. CHAS. THURNEYSSEN.—*Improvement in Treating Fish for Manure and Oil.*—Patented March 6, 1855.—Patented in France, January 13, 1851. (Plates, p. 19.)

The raw fish is placed in a boiler heated by steam, no water being added. The fish, when sufficiently boiled, is put into a press, and the

oil extracted from it. It is then brought under the action of grating machinery, and the particles are finally exposed to a current of hot air. The particles, when dried, are still more reduced by proper grinding apparatus to produce the powder ready for use.

We claim the reduction of fish, or the remains of fish, to a dry powder for manure and other purposes, substantially as specified.

No. 12,152.—ALEX. ANDERSON.—*Improvement in Seed Planters*.—Patented January 2, 1855. (Plates, p. 19.)

The hopper F being filled with potatoes, the apertures *f*, in the upper part of apron D, will receive potatoes of suitable size, and these potatoes will be carried along as the cogs of wheel O gear into the apertures in the lower part of the apron. Those potatoes which are so large as to project over the surfaces of the blocks *d*, after having been received into the apertures, will be cut off when reaching the knife G. The blocks *d* of the apron passing around roller *a*, the potatoes drop through the spout L into the furrows.

The inventor says: I do not claim cutting potatoes for planting by means of a horizontal reciprocating knife. What I *claim* is the peculiar construction of my seed planter, by which the apertures *f f* are made to perform the double function of carrying a graduated amount of seed to the discharge spout, and also of receiving the teeth of the wheel O, by which motion is communicated to the endless apron, as set forth.

No. 12,231.—JARVIS CASE.—*Improvement in Seed Planters*.—Patented January 16, 1855. (Plates, p. 19.)

The slide I is vibrated in the following manner: the wire S passes through the handles F F, and is so arranged between arms *h h* and H, that when the operator bears down on the thumb-lever *x*, the weighted lever *g* turns the rocker G back, and arms *h h* (on rocker G) press down on the elastic wire S, so that, when the thumb-lever is relieved, the wire and the weight of the weighted lever throw the rocker forward, and arms H (on rocker G) press upward on the wire, and again throw the rocker back, which causes the vibratory motion. These rapid vibrations of the slide, which agitate the seed in the aperture as well as above the aperture, are intended to fill the aperture more readily than is usually done.

*u* is a brush-stock, which is secured at each end by means of screws, and is hollowed out on the underside; *v* is the brush which passes through the brush-stock, and projects down, or nearly down, to the cut-off plate *t*, and directly over the angle in said plate. The object of the brush is to aid the cut-off plate, by brushing all superfluous grains from aperture *i*, before the seed comes in contact with the cut-off plate.

The use of leather, or other elastic substance, for the cut-off plate, is intended to allow it to rise and let the seed pass under it without being injured.



*Claim.*—1st. The agitation of the seed-slide I by means of a rocker G, wire S, and levers g and x, for the purpose of filling the seed-hole with a uniform amount of seed, as set forth.

2d. The elastic cut-off plate t, in combination with brush v, arranged and constructed in the manner and for the purpose described.

No. 12,256.—ELIJAH MORGAN.—*Improvement in Seed Planters.*—Patented January 16, 1855. (Plates, p. 19.)

B is the V-shaped bottom of the hopper A. The bar D is placed so as to form recesses a between its sides and the sides of the hopper. Bar D is grooved on the underside, in which groove slides the reciprocating bar E. The lower edge of E is V-shaped, and fits nicely to the bottom. The seed passes through recesses b in the bar, and through apertures c, out of the box.

*Claim.*—1st. The combination of the stationary protecting-bar and the reciprocating feed-bar, when the latter operates within a groove in the former, substantially in the manner described.

2d. The combination of the V-shaped forms of the bottom of the hopper and the bottom of the reciprocating bar, when said bar is provided with openings from both sides, which meet and vibrate over the holes c, in the bottom of the hopper, substantially as described, and for the purpose set forth.

No. 12,260.—STEPHEN L. STOCKSTILL and PETER H. HUMES.—*Improvement in Seed Planters.*—Patented January 16, 1855. (Plates, p. 20.)

This feeding apparatus is located below the hopper which contains the seed grain, and consists of a plate a, with a bevelled-edged opening 1 through it, forming a mouth-piece. The plate c resembles in form a plane-bit, with the slot continued to the edge; and this, by its retraction or impulsion forward, can be made alternately to open or close the aperture in plate a. Below c is another sliding-plate b, with an aperture 2 through it of a triangular shape, so as, by its motion in or out, to limit the size of the passage through which the seed passes. The ratchet-teeth, on feed-wheel d, carry forward the seed and discharge it on to the spouts e e'. The edges of the triangular aperture through plate b converge lengthwise, so that, as it is slid back, the passage may become narrowed and diminished in area. From the middle of the feed-wheel projects a flange f through the plates and into the hopper, for the purpose mentioned in the claims.

Figure 1 represents a top view; fig. 2 a longitudinal section; and fig. 3 a cross section.

*Claim.*—1st. The converging openings of the gauge-board, permitting the graduation of the amount of feed, without narrowing or circumscribing the passage with respect to the size of grain, which is thus preserved from cutting or injury.

2d. The dividing ridge or flange around the perimeter of the feed-wheel at its mid-width, enabling the same wheel to score two exactly equal rows, and, at the same time, serving to stir the grain, and to shift out of the way any tailings or other obstructions that would intercept the discharge.

3d. The bevelled or flaring axial mortise through the feed-wheel, preventing any unevenness of the axle from wobbling or clogging the wheel, or disturbing the feed.

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No. 12,294.—ISAAC WILLIAMS and ISAAC W. BAUSMAN—*Improvement in Cotton Seed Planters*.—Patented January 23, 1855. (Plates, p. 20.)

The inventors say: We are aware that one or more shafts, with teeth, have been placed within the hopper, and that a single cylinder, with a series of spirally set teeth, has been employed in the throat of the hopper of seed planters; we therefore do not claim these devices.

But we *claim* the use and combination of two cylinders, placed one above the other, not in the hopper, but in the throat below the hopper, one furnished with a row of long teeth, and the other with a row of short teeth, the teeth on each cylinder being placed helically around it, for the purpose of separating and distributing or scattering the cotton seeds in the manner described. (See engraving.)

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No. 12,307.—JOHN BLACKWOOD.—*Improvement in Seed Planters*.—Patented January 30, 1855. (Plates, p. 20.)

The inventor says in his specification: "A gain is cut on each side of the hollow stock, making a double tenon on the beam to fill said gains; just below the cross piece there is a mortise for the slide, bevelled so that the end of the slide will strike the beam one foot before the stock; the bottom of the hopper is made with the same bevel, so that the slide, marked *a a*, runs along it under the corn, and where it passes through the partition (marked with dotted line *x*); the mortise is made half an inch above the slide, to prevent the corn from passing out too fast. A stiff brush is secured above the slide to keep back any superfluous grains that may lodge on the cup." This cup *y* is alternately brought over the hole in the stock, so as to drop the seed. At the bottom of this hole or tube there is a valve *e*, which receives the seed as it falls from slide *a*.

*Claim*.—The additional hopper to catch the seed which falls off of the slide after it passes the brush, substantially as described.

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No. 12,308.—JOB BROWN.—*Improvement in Seed Planters*.—Patented January 30, 1855. (Plates, p. 20.)

The inventor says: I do not claim, separately, the distributing plates I, for they have been previously used.

But I *claim* the combination of the cups F, placed obliquely on a rotating cylinder, in combination with the distributing plates I, the above parts operating in the manner and for the purpose shown and described. (See engraving.)

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No. 12,447.—ROBERT ROMAIN.—*Improvement in Seed Planters.*—Patented February 27, 1855. (Plates, p. 20.)

J is the digging cylinder provided with teeth M; *n* is the seed box, and the seed passes out between the brushes *t* and grooved roller O; the roller *r* serves to carry the weight of the end of the levelling box *m* as it passes over the pulverized soil.

The inventor says: I am aware that a seeding apparatus has been arranged to follow a toothed cylinder, and also to precede either a toothed cylinder or roller; therefore, I do not claim either.

But I *claim* the rotary-toothed cylinder or digger, followed immediately by the seed sower and roller, as described.

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No. 12,465.—ANDREW J. BARNHART.—*Improvement in Seed Planters.*—Patented February 27, 1855. (Plates, p. 21.)

The seed being placed in the upper part of cylinder A, the rod B is first drawn upward, and then turned from right to left, in order to bring plate *f* over aperture *c* in disc *a*, so as to cut off the communication between aperture *c* and the space above it. As the plate *f* is turned, the loose disc *b* is also turned, and aperture *d* brought under aperture *c*. In turning the rod, the pin *m* acts against pins *l l* on plate F, and the edges of the eyes *h*, in the projections *i* at the upper end of the cylinder, are forced from recesses *k*, and rod B is pressed downward, and cylinder D forced into the ground, and then withdrawn by drawing up rod B, D being filled with earth and a hole formed in the ground. The eyes *h* catch into the recesses *k*, (by force of springs *j*;) and hold D in place. B is now turned from left to right, and aperture *d* is brought over *c*, and the corn in *d* falls down and around D into the hole made in the earth. B is now forced down, the spring G assisting, and piston C forces the earth out of D into the hole in the earth, thereby covering the corn which was dropped therein.

*Claim.*—The combination of the discs *a a b*, moveable cylinder D, and piston C, the above parts being enclosed, or working within a cylinder or case A, and arranged substantially as shown and for the purpose set forth.

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No. 12,554.—EBENEZER MORSE.—*Improvement in Seed Planters.*—Patented March 20, 1855 (Plates, p. 21.)

The inventor says in his specification: Put the seed in at the top of the box, take hold of the handle *r* with the back of the hand toward the back board B, then raise and depress the back board by raising and depressing the back part of the hand, by which means the seed will be received into the seeding recess *g*, and passed beneath the bot-

tom of the box into the depositing tube. It will be seen that if the end of the depositing tube *a* is plunged into the earth with the seed therein contained, and the back board raised in its progress upward, the cam *n* will not have acted upon the arms *o* of the scrapers *j*, until the end of the depositing tube has opened (as seen at fig. 2) and dropped its seed; and it will also be seen, that as the back board is further raised, the cam will act upon the arms of the scrapers, causing their projecting oblique lower ends *k* to approach each other (see fig. 3) and cover the seed with earth; and that by depressing the back board the earth will be stamped upon the seed, and the seedling tube supplied with seed for the next hill.

*Claim.*—The scrapers *J J*, the cam *n*, and sliding back board *B*, as arranged, combined, and operating conjointly with the seed box *A*, for the purpose of depositing seed in hills, covering it with earth, and pressing the earth upon the seed.

Also, the oscillating motion of the horizontal handle connected to the front and back part of the seed box, by a hinge joint at each end of the handle, substantially in the manner described.

No. 12,557.—DANIEL H. PHILLIPS.—*Improvement in Seed Planters.*—Patented March 20, 1855. (Plates, p. 21.)

The operation of spring lever *f*, in combination with seed box *y*, will be understood from the engravings. In the position of the roller *g*, represented in the engravings, only one single cog *w* operates the lever *f*, which answers for corn planting. For grain planting the roller is reversed, when the spring lever will be acted upon by the cogs *u*.

The inventor says: I do not claim opening the seed-delivering slide by a cog or projection on the carrying wheel or roller, striking against a lever to operate the slide; neither do I claim closing the seed-slide after the roller has ceased to operate it by the action of the spring.

But I *claim*, first, the employment of a spring lever *f* to open and close the seed slide in such a manner that while it serves to open the slide, by the direct action of the revolving wheel or roller, as specified, the same lever, by its elasticity, closes the slide after the discharge has been made, as set forth.

Second. Providing both ends of the carrying and levelling roller, which operates the seed-slide lever with cogs or projections so arranged, that by reversing the roller, as described, a slower or quicker movement is given to the delivering slide, according to the description of grain to be planted.

No. 12,561.—BENJ. M. SNELL.—*Improvement in Seed Planters.*—Patented March 20, 1855. (Plates, p. 21.)

The striker *a* on wheel *K*, when acting against the end of slide *b*, forces the latter in, thus dropping the seed.

The inventor says: I do not wish it to be considered that I claim novelty in the devices of my plough, when considered separately.

But I *claim* the construction of a plough wherein a double share D is used to open the soil in combination with a seeding tube H, hopper G, striker *a*, wheel K, operating in the manner set forth, for the purpose of depositing seed in the prepared soil, without the objection of an open furrow.

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No. 12,603.—HIRAM MOORE.—*Improvement in Seed Planters*.—Patented March 27, 1855. (Plates, p. 21.)

The grooves *a* in the distributing wheels K, have the same width as the opening in the seed box L. The partitions *c* prevent the grain from slipping in said grooves and running out, when the seeding machine is not in motion; and also regulate the quantity to be given out. The seed is dropped upon dash board H, from which it rebounds, and scatters with regularity by its own action.

The inventor says: I do not claim a grooved and distributing wheel, nor a seed scattering board, individually.

I *claim* grooved seed distributing wheels K K, provided at the bottom of the grooves with partitions extending about one-third of their depth, in combination with the dash board H, in the manner and for the purposes set forth.

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No. 12,608.—MYRON WARD.—*Improvement in Seed Planters*.—Patented March 27, 1855. (Plates, p. 21.)

Figure 1 represents a bottom view, and figure 2 a side view of this apparatus. Figure 1 represents only about one-half of the apparatus, the other half being exactly alike.

D is one of the two wheels of this seed planter, and F the compressors mentioned in the second part of the claim. T is one of the two shears provided with slots *t*, and adjustable by means of thumb screw *s*.

*Claim*.—The adjustable slotted share, for the purpose of removing obstructions, and at the same time allowing the fine earth to pass through the slots, which share is made adjustable by means of a thumb screw and plate in rear.

Also, the short compressing blocks on the periphery of the wheel, which compressors crowd the earth laterally over the seed, and at the same time indicate the place of the hill, by which means the grain can be planted in check rows.

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No. 12,618.—CHESTER B. BORDEN, BENJ. S. BORDEN, and AARON R. McLEAN.—*Seed Planter*.—Patented April 3, 1855. (Plates, p. 21.)

S is a spout which conveys the seed down to the blade of the hoe.

*Claim*.—Attaching to the handle of an ordinary hoe a chamber or box B, which contains the corn or seed to be planted, said chamber or

box being provided with a slide D, having a slot or recess *h* in its lower end, which slot or recess may be increased or diminished in size, by adjusting the small slide E.

The slide D being arranged as shown, so as to be operated by the finger of the operator, and the spiral spring H, for the purpose of depositing the seed or corn in the holes or furrows in the earth made by the hoe, as shown and described.

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No. 12,641.—IVES W. MCGAFFEY.—*Improvement in Seed Planters.*—Patented April 3, 1855. (Plates, p. 22.)

Hopper E contains the seed, and C the manure. The manure descends on to the loosely suspended tilt apron K that is hung upon a horizontal axis *e*, and is so constructed and furnished with a weight *f*, and so operated by roller F, that while its own weight keeps it closed, the roller F (by means of peg *g*) opens it at the proper interval, (see dotted lines,) thereby discharging the manure together with the seed which has been carried round by the rake fingers *b* on roller F, and deposited on the same apron with the manure.

The inventor says: I am aware that a swinging fertilizer discharge valve, in connexion with a seed planter, of itself, is not new.

Also, that a tilt apron abruptly operated by cams, to discharge accumulated seed let on to it by a separately driven slide or valve, has before been employed; but the relative arrangement, construction, and operation of these parts has been different; as substantive devices, therefore, or otherwise than as arranged and operating in connexion, I do not claim them.

I claim the combination of the fertilizer tilt apron K, with the seed distributing roller F, constructed, arranged, and operating together, substantially as specified.

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No. 12,672.—JASON W. COREY.—*Improvement in Seed Planters.*—Patented April 10, 1855. (Plates, page 22.)

When the seed is to be dropped, the rod F is pulled backward, and, being looped to the coiled spring E, pulls the spring back, carrying with it the regulating slide K, in the aperture of which the seed is to be dropped.

The inventor says: Disclaiming all devices separately considered, except the adjustable seed or slide box D, which I claim as constructed, arranged, and described,

I claim the arrangement of adjustable slide K, adjustable seed gauge *n*, coiled spring E, and connecting rod F, together with grooved roller I, slotted arms J J, front share G, adjustable clod mover *p*, and covering shares H H, as set forth and operated.

No. 12,783.—PRESLEY RAINES.—*Improvement in Corn Planters.*—Patented May 1, 1855. (Plates, p. 22.)

If the handles *j* are elevated, the platform *g* slides back and drops the seed which was upon it into drill spout *h*. At the same time the lifter *d* descends to take another charge of seed. The handles being allowed to drop, the platform is re-inserted, the lifter *d* ascends and drops the seed, through the hole *f*, upon the platform. Simultaneously with this movement the plunger *k* is protruded, so as to leave an annular opening between its flaring surface *l* and the corresponding flaring vent of the drill spout *h*, thereby allowing the seed within the spout to drop out. The flaring foot is intended to scatter the seed suitably, and to pulverize and depress a suitable bed for the reception of the seed.

*Claim.*—The combination of elevator, sliding platform, and flaring plunger, substantially as described, operated simultaneously by the elevation and depression of the guiding handles.

No. 12,811.—GEORGE W. BROWN.—*Improvement in Seed Planters.*—Patented May 8, 1855. (Plates, p. 22.)

The circular plates *d d* connected by a rod *e*, and simultaneously vibrated by a hand-lever *D*, are arranged underneath the bottom of the hoppers *C*, which bottom has an opening *c*. Connected to the under side of the plates *d*, and simultaneously vibrating with them, are valves *f*, which are arranged in the hollow tubular rear part of the runners *A*, which form the furrow, by means of the sharp edge *a*. The covering wheels *J J* are hung in arms *G G* and *H H*. The inside arms *H* have cam wedges *h*, on which rests cross-beam *L*. By fastening this cam to one or the other of the holes 1, 2, 3, the front part of the machine, and the runners with it, will be raised or lowered, and, consequently, the depth will be adjusted at which the seed are planted. The driver, by shifting his position on seat *K*, forward or back, may cause his weight to add to the raising or holding down of the front part of the machine.

*Claim.*—In combination with the hoppers and their semi-rotating plates *d*, the runners *A*, with their valves *f*, and their adjustment by means of the levers and cams and the driver's weight, for the purpose of carrying and dropping seeds by each vibration of the lever *D*, and to regulate the depth of the planting, as described.

No. 12,867.—A. H. MORREL.—*Improvement in Cotton Seed Planters.*—Patented May 15, 1855. (Plates, p. 22.)

*w* is the seed-distributing wheel.

In rear of hopper *D* is the coverer *H*, consisting of a blade *e*, handle *h*, and gauge *g*. The handle rests on cam *G*, secured to crank-shaft *I*, and is attached by its extremity to the sliding-bar *J*, to which the crank-shaft *I* imparts a reciprocating motion. Consequently, as the

main shaft A revolves, the coverer has a reciprocating motion across the furrow, simultaneously with a vertical motion produced by the cam G, which causes the blade *e* to enter the earth, when the slide J is in the position shown in figure 1, and, after covering the seed, maintain an elevated position during its backward motion.

*Claim.*—The combination of sliding bar J, coverer H, cam G, and eccentric shaft I, or their equivalents, arranged and operating substantially as hereinbefore set forth.

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No. 12,895.—L. W. COLVER.—*Improvement in Seed Planters.*—Patented May 22, 1855. (Plates, p. 22.)

The figure represents one of the wheels A<sup>1</sup>, which are arranged on the axle *a*. The weight of the hopper E, and the machine generally, holds the wheels A<sup>1</sup> into the ground, whilst the springs F allow each wheel to follow the inequalities of the ground, without raising or lowering any other of the wheels. The seed passes from the hopper, through the flexible tube H, into metallic tube I, on the bottom of which is arranged the divider J. This divider terminates in a point, and gradually widens towards its rear, next to the covering wheel L. Thus it acts as a shoe, holding the furrow (cut by the flange K) open for the reception of the seed.

*Claim.*—Hinging the pieces A, which support the wheels A<sup>1</sup>, at the point B, this being also the point of attachment of the arms D, and interposing between A and D a spring F, so that said two pieces may radiate from nearly the same centres; said springs tending to hold the wheels into the ground, whilst each one of the series may yield to any inequalities in the ground, without affecting the others, as set forth.

Also, the arrangement of the sword or divider, such as described, upon the tube I, and projecting it forward, in close contact with the flange on the wheel, so that it may enter the ground with said flange, and spread and hold open the furrow for the reception of the seed, as described.

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No. 12,924.—EDGAR M. STEVENS, JOSEPH B. CROSBY, and JOSEPH W. PEARSON.—*Improvement in Seed Planters.*—Patented May 22, 1855. (Plates, p. 23.)

The feed rollers D D are covered with India-rubber, or any similar yielding material, to prevent the seed from being bruised between the rollers. To spread the grains, which will be in close proximity with each in the direction of the length of the roller, (too close for seed to be sown,) the distributor C is introduced.

*Claim.*—The application of elastic surfaced feed rollers in sowing machines, in connexion with an expanding tubed spreader, constructed and arranged substantially in the manner and for the purpose set forth.



No. 12,958.—THOS. S. MINNISS.—*Improvement in Seed Planters*.—Patented May 22, 1855. (Plates, p. 23.)

H are half tubular projections, (consisting of half tubes secured in the wheel B by means of plugs, so that they can be secured at any projection desired,) that dip the seeds from hopper D, and discharge them into tube G, a portion N of which spreads out against the side of the wheel to receive them. When seed is to be planted in hills, all the elevators H are to be driven into it, and one is to be drawn out far enough to contain a sufficient quantity for a hill. The sifting box E is hung on straps I, and receives a shaking motion from the staples around the wheel. The spout F, discharging directly over the seeding tube, can be set at any inclination so as to discharge fast or slow, and is intended for such seeds and light fertilizers as are to be buried with the discharges from the hopper.

*Claim.*—The wheel B, with the sliding or expanding elevators H H H H through its side, in combination with the sifting box E, and the spout F, constructed and arranged substantially in the manner and for the purpose set forth.

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No. 12,990.—LUCIEN A. BUTTS.—*Improvement in Seed Planters*.—Patented June 5, 1855. (Plates, p. 23.)

M is the hopper; *m* is the valve opened and closed, as illustrated by dotted lines, the valve being connected to a rod *n*, and controlled by a helical spring *o*; as the seed bar *h* moves upward, the rod *n* strikes against arm N, which forces down the valve opening, and allows the seed to drop through the tube *o*<sup>1</sup> towards the ground, the spring *o* closing the valve when the bar *h* descends; during the ascent of the bar, the space within the tube *o*<sup>1</sup>, above the valve *m*, will be filled with seed out of hopper M, which is afterwards dropped, as above described. By adjusting the shield *i* and the valve higher up or lower down, the said space for the reception of the seed, and consequently the quantity of seed to be dropped, will be increased or decreased.

*Claim.*—Raising the seed to be planted up in a cup or cell, vertically, or nearly so, above the height of the grain in the hopper, and then tripping a valve in the cup or cell, and allowing the seeds contained therein to drop through a tube towards the ground, substantially as described.

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No. 12,995.—CHARLES H. DANA.—*Improvement in Seed Planters*.—Patented June 5, 1855. (Plates p. 23.)

The operation of this seed planter will be understood from the claims and engravings.

*Claim.*—The arrangement of the hinged vibratory mouthed piece *p s s*, at the lower end of the staff B, with the projecting portion of the front slide *b* of the seed box, and with the incision plate *f* descending therefrom, in such a manner that a downward sliding movement of

the said staff upon the seed box, will close the said mouth-piece upon the incision plate, and form an incising planting receptacle for depositing the seeds in the ground; and an upward sliding movement of the said staff upon the seed box will force open the said mouth-piece, and leave the seeds in the extreme bottom of the incision formed by the said planting receptacle, substantially as set forth.

I also claim the arrangement by which I positively insure the opening of the mouth piece *p s s*, of the planting receptacle, at each upward movement of the handle B, viz: by means of the projecting portion *j* of the plate *i*, which is secured to the seed box, or its equivalent, operating substantially as set forth.

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No. 13,077.—URIAH BEBEE.—*Improvement in Corn Planters*.—Patented June 19, 1855. (Plates, p. 23.)

Two shafts J, attached to standards E, serve as handles to the hoes K, which dragging behind the machine fill the holes made by the planters B, and cover the seed in the earth, the forward ends serving as levers to raise wheels A when required to adjust the planters. The two supports L attached by staples to shafts J, forward of the axle-tree F, serve as fulcrums.

I claim the shafts J and supports L, combined, and arranged, and operated in the manner and for the purposes set forth.

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No. 13,151.—OREN STODDARD.—*Improvement in Corn Planters to be operated by hand*.—Patented June 26, 1855.—(Plates, p. 23.)

The nature of this improvement will be understood from the claim and engravings.

Fig. 3 represents the position of the parts of the machine when the plunger C is down.

The inventor says: I do not claim any of the described parts separately, or irrespective of the arrangement shown.

But I claim the arrangement of the follower or plunger C, dropping or sliding plates *d*, and agitators or distributors formed by the levers D D, provided with cross arms *i* and rods *j*, the parts being operated as shown, and for the purpose as set forth.

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No. 13,185.—WM. STINSON.—*Improvement in Corn Planters*.—Patented July 3, 1855. (Plates, p. 23.)

Corn boxes R are fastened to each spoke C, and have doors E for filling them. Hinged to the boxes are spades F, kept shut by spring I. In each of the boxes there is a trough K divided into several compartments, and at the bottom of each compartment is a hole of the size of a kernel of corn; a roller L, over which fits the concave bottom of the trough, is provided with corresponding holes, each sufficiently large to hold a kernel of corn. The roller axles are provided with cranks M, working through slots in the rim A, and operate the rollers by striking

against a pin on the wheel frame B; each roller making a semi-revolution backwards and forwards, at every revolution of the wheel, brings each time the roller holes to correspond with the trough holes, and consequently a kernel of corn will be discharged and (as the wheel turns and the spade opens) drop out.

The inventor says: I am aware that spades similar to mine have been used; but I *claim* the arrangement of the seed rollers and corn box in the spoke of the wheel, in combination with the spade, as set forth.

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No. 13,326.—PIERPONT SEYMOUR.—*Improvement in Seed Planters*.—Patented July 24, 1855.—(Plates, p. 24.)

The seed box *b* extends from side to side; one side of this box is stationary, and the other side, or the lower portion thereof at least, is movable to or from the stationary part; the two ends of the seed box, and the partitions therein, are attached firmly to the stationary side thereof on one side, while on the other they are furnished each with a spring *b*<sup>1</sup>; the movable part of the box is thus forced off from the other, so as to open a space the whole length of the bottom. This movable portion of the seed box is jointed, or attached to the ends of the seed box and partition by the angle irons or plates *c*, which extend down, covering the springs abovenamed, and prevent clogging, and also serve to maintain the side at a proper level, and not to let it fall as it opens; a series of bolts *d* pass through the two sides, being affixed to the moving side; on the stationary side, these bolts are connected with a series of wedges *e* connected together and sliding endways, so as to open or close the seed box to any desired degree, to regulate the delivery of seed. The grain-teeth bar *h*, the vibrating plate *f*, and other moving parts, are worked by a cam on the hub of the wheel in the ordinary way. The apparatus, for raising one or all of the drill tubes *m*, consists of a shaft *n*, on which is affixed a series of bent levers *o* and connecting rods *p*, instead of the usual chains, which latter are liable to be tangled. Fig. 1 represents only one end of a top view of the apparatus.

*Claim*.—First. The combination of the movable side of the seed box with angular hangings *c*, spring *b*, fig. 3, and inclined planes or wedges *e*, or their equivalent, for the purpose of opening and closing said box, and thus regulating the quantity of seed, or substance to be delivered.

Second. I *claim* the slide plate *f*, to prevent the seeds from clogging, as described.

Third. The combination of the angular levers *o*, having their fulcrum or inclined standards, or its equivalent, with the rods *p*, linking them to the drill tubes *m*, in the manner and for the purposes set forth.

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No. 13,387.—ROBERT W. FENWICK and REINHOLD BOECKEN.—*Improvement in Corn Planters*.—Patented August, 7, 1855. (Plates, p. 25.)

The tube K is to prevent the entrance of dirt, and also serves for operating the slide, as it yields as the planting tube descends, and

consequently turns the slide, and remains stationary as it rises, and thereby causes the slide to assume its original position. The position of the swinging slide D, at the time the planting tube A is being thrust into the ground, is represented in dotted lines in figure 1.

The inventors say: We claim nothing new in the loose covering, interior ring, or tube K, separately considered, at the bottom of the planting tube; and are aware that a conical valve at the bottom of the planting tube, connected with a seed delivery slide for operation together by a lever or handle, distinct from any thrust or pull imparted to the tube itself, and employing a much more complicated and different arrangement of operating gear, has before been used.

We *claim*, the combination and arrangement, as shown, of the swinging seed slide D, valve H, and tube K, for the purpose set forth.

No. 13,401.—SILAS G. RANDALL and JAMES H. JONES.—*Improvement in Seed Planters*.—Patented August 7, 1855. (Plates, p. 25.)

The nature of this invention will be understood from the claim and engravings.

The inventors say: In that class which open the soil and deposit the seed, by dropping rather than by forcing, a device has been used with a round bivalvular point entering the ground, and dividing in such a manner as to displace the earth, and drop the seed; also another device, by which a solid naked wedge pierces the soil, and the seed, on its withdrawal, is dropped into the opening; also another device by which the piston, protruding below the drill, is driven upwards by the pressure of the earth, and receiving the seed in a cavity in its side, on lifting the machine, is pressed down by a spring, and discharges the seed against the earth, while the piston fills the hole in the ground; we therefore do not claim any of these.

But we *claim* the use of a sheath B, and a tongue C filling it, so combined with a lever D and forcing handle G, that by means thereof, or their equivalents, the sheath and tongue may be struck into the ground as one solid piece, after which the tongue may be raised, leaving the sheath in the earth as a lining, until the seed is deposited through the lining, substantially as described.

No. 13,419.—ANDREW J. BARNHART.—*Improvement in Corn Planters*.—Patented August, 14, 1855. (Plates, p. 25.)

By the movement of the single handle F, a hole is made in the earth, the corn deposited therein and covered.

The inventor says: I am aware that a box, or cylinder and plunger, have been previously used for the purpose described. A patent has been granted to me in which such device was used, though differently arranged and operated from the way shown.

I do not *claim*, therefore, the box and plunger for the purpose shown, irrespective of the mode of operating the same.

But operating the box D and plunger E, by means of the rods *i j* attached to an oscillating arm *h*, which is placed on the shaft of the dis-

tributing roller C, whereby the box and plunger are made to move simultaneously in opposite directions, as shown, and for the purpose set forth.

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No. 13,551.—FREEMAN PLUMMER and GILMORE B. ROLLINS.—*Improvement in Seed Planters*.—Patented September 11, 1855. (Plates, p. 25.)

The forward end of the frame is supported by wheel *n*, which has projecting from one side of it one or more pins *o*, which, striking the tappet *p*, temporarily advances the rod *q*, which, in its turn acts by means of links *r r* and rods *s s*, to vibrate the plates *h g*, so as to drop the seed. Immediately upon the escape of the tappet, the spiral spring *t* pushes back the rod *q*. The rods *s* are made extensible.

We *claim* links *r r*, in combination with the adjustable rods *s s*, when constructed and arranged in the manner and for the purpose set forth.

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No. 13,683.—EBENEZER McCORMICK.—*Improvement in Seed Planters*.—Patented October 16, 1855. (Plates, p. 25.)

In order to furnish a guide to the driver when to deposit the seeds, the ground is cross marked by first passing the machine over it at right angles to the direction in which the rows are to be planted. During this part of the operation, the drag B (connected to the machine by a link *a*, and kept in position by two guide rods *b*) is let down on the ground, and the drill-teeth R are raised away from the ground. The machine is then arranged for planting by hoisting out of the way the drag B, and letting down the drill-teeth sufficiently for depositing the seed at the required depth.

When planting, the driver causes the seed bar to move and deposit the seed at each moment when crossing one of the marks made by the drag or wheels.

In the engravings only part of the front part of the machine is shown.

*Claim*.—So arranging the drag B with its link and guides, and the wheels A A, with regard to a seeding and covering apparatus, such as described, as that they shall be guides and markers for directing the dropping of the seed at stated intervals, as set forth.

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No. 13,694.—FRANCOIS G. WYNKOOP, assignor to HENRY L. EDSON.—*Improvement in Seed Planters*.—Patented October 16, 1855. (Plates, p. 25.)

The operator takes the machine by the handle (at the upper end of the machine not shown in the engravings) and forces the spades C C into the ground till the bars of the spades rest upon it, then forces down the slide G, which turns cylinder A, and discharges the seed, contained in N, into tube L; this movement of slide G will also open the spades which are hung to the frame I by rods D, and pivoted to L, which latter fastened to slide G; thus the seed will be allowed to drop out of the

tube L. The spades are then drawn out of the ground while open, which causes the soil to fall over the tops of the blades P P of the spades through the opening in their sides, completely covering the seed. The operator then draws back the slide G.

*Claim.*—The construction and arrangement of the spades C C with the tube L, when attached to and operated upon by the slide G, for the purposes above set forth.

No. 13,706.—DANIEL B. NEAL.—*Improvement in Seed Planters.*—Patented October 23, 1855. (Plates, p. 25.)

The slides *a*, for dropping the seed, play on the bottom of the seed boxes immediately under steel springs *n*, which springs completely cover the slot in the slide when drawn out for dropping the seed. The slides and shovels *c* are worked simultaneously from the posts *m*. The shovels swing on central pivots, and play closely to the slots in the slides *a*. The slots *l* in the slides serve to receive the seed. The gauge slides *b* can be set so as to diminish or enlarge the size of the slots, to adapt the machines to seeds of different sizes.

The gauge slides can be adjusted by unscrewing the posts *m*, and are then held in their proper position by again tightening the posts. T are the drill teeth.

*Claim.*—The arrangement of the shovel *c*, the slotted and grooved slide *a*, and gauge slide *b*, when constructed and operated in the manner and for the purpose set forth.

No. 13,794.—THOMAS R. MARKILLIE.—*Improvement in Corn Planters.*—Patented November 13, 1855. (Plates, p. 25.)

The weights I have marking points *l* and arms *p*, said arms moving upon guides *q* and *r*. When a weight or marker *l* has passed guide *q*, it falls to the hub of the wheel upon a lever, which lifts the seed slide *f*; and when it has passed guide *r*, it falls to the rim of the wheel on another lever, which lifts the stopper weight *m*, which allows the seed to drop to the ground.

*Claim.*—The reciprocating weighted markers I, acting substantially as described, to perform the double function of operating the planting apparatus and marking the hills, as specified.

No. 13,820.—D. W. HUGHES.—*Improvement in Hand Seed Planters.*—Patented November 20, 1855. (Plates, p. 25.)

The two positions of the instrument, represented in the engravings, will explain the nature of the improvement.

The inventor says: I do not claim separately, or in itself, the perforated slide D working in a seed box for distributing seed; for that is an old and well known device.

But I *claim* the seed box C and perforated slide D, when attached to the blades A A, connected by a joint *a*, arranged substantially as shown, for the purpose specified.

No. 14,003.—ANCIL STICKNEY.—*Improvement in Hand Seed Planters.*—Patented December 25, 1855.—(Plates, p. 25.)

As the planter is lifted, plunger B slides up till cup F is filled with seed and comes above the upper edge of plate G, when the seed falls out of the cup and is conducted by D down into the angular space between C and N, and under the lower end of B. When the planter is struck into the ground, the wedge C N enters as far as I, when B descends and crowds the lower end of jaw C open, and expels the seed; the spring E prevents the seed in the box running out through F, when F is above G.

Spring M prevents the plunger from sliding downwards upon the seed box, in operating the machine, until after the lower edge of C N has entered the ground to the proper depth.

*Claim.*—In a seed planter having a wedge-shaped planting receptacle, whose hinged side is closed by the action of a spring, combining the plunger of said planter to any suitable portion of the seed box, by means of a spring of sufficient thickness, to prevent said plunger in operating the planter from sliding downwards on the seed box, and opening the planting receptacle, before said receptacle has penetrated to the desired depth into the ground, to deposit the seed contained in it, substantially as set forth.

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No. 12,241.—ARNTON SMITH.—*Improvement in Ploughs.*—Patented January 16, 1855. (Plates, p. 25.)

The inventor says: I do not claim any of the separate parts of my plough as new, and I am aware that the ploughs have been united somewhat like mine; but so that both must advance together, and one must, when raised alone, rotate upon and affect the other, whilst my separate ploughs may move freely.

Therefore, I *claim* the manner of coupling plough 1 with plough 2, by means of hinged slide-rods D, bar E, and rod F, for the purpose of allowing each plough a somewhat free and independent motion, and yet bring the plough under the control of one hand of the ploughman, and in some degree control both ploughs, as set forth.

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No. 12,310.—ALFRED DOE.—*Improvement in Ploughs.*—Patented January 30, 1855. (Plates, p. 26.)

The body J, with the point L, and shares M, can be vibrated on pivots *e* and *i*, from position represented in figure 1, in full lines, into the position represented in dotted lines, and can be raised up on the opposite side of standard F, to the position represented in figure 2. The front standard F has an enlarged projection Q, with two sockets for the pivots of the furrow boards R and S. Furrow board R is designed for level land or side-hill ploughing, and has an arm T hinged to the stand U, so that it can be turned to either of the positions represented in the engraving. The left hand furrow board is just the *reverse* of the one described, (the right hand one,) and is applied to

the opposite side of the plough with its appurtenances, for level land and side-hill ploughing. The left hand furrow board can be removed, and a sub-soil furrow board S put in its place, the rear end of which is made to stand higher and farther from the beam than the common furrow board; and its lower end is curved as seen at *r*, so as to raise the sub-soil furrow up, and carry it out and turn it upon the top of the common furrow just ploughed, when the plough runs in the opposite direction.

*Claim.*—First. Two separate furrow boards, arranged to vibrate perpendicularly, independent of the point and share, so as to turn, alternately, right and left furrows on level or inclined land, with equal facility; operating in combination with a swivel point and shares arranged to vibrate under the land slide, with the body or front portion of the furrow board, substantially as described.

Second. In combination with the swivel point, shares, body, and one of the furrow boards mentioned in the above claim, I claim a sub-furrow board, arranged to vibrate perpendicularly, so constructed as to turn a sub-soil furrow in one direction, upon the top of the furrow just ploughed in the opposite direction, thereby making it serve as a common plough in one direction, and a sub-soil in the other, substantially as described.

No. 12,381.—GEORGE ESTERLY.—*Improvement in Ploughs.*—Patented February 13, 1855. (Plates, p. 26.)

The mould board and share are bolted on the edges of the form lay, the rebates D E forming supports or guards to the same, and the edges of the mould board and share are in contact with the edges of ledge B, the ledge being between them. The use of a wider or narrower ledge B will allow to insert mould boards and shares of various thicknesses. The portion A is raised sufficiently to correspond to the thickness of the mould board and share.

The inventor says: I am aware that a standard has been cast with wings to support the shares and mould board.

But I *claim*, casting the standard G with raised portions A, land side H, and form lay K, all in one piece, to be employed either with or without projection B, as set forth.

No. 12,387.—JOHN W. HAZZARD and GEO. BULL.—*Improvement in Rotary Ploughs.*—Patented February 13, 1855. (Plates, p. 26.)

This improvement consists, 1st, in arranging the ploughs on rods H, passing horizontally through the lower end of a vertical revolving shaft D, so that they shall travel in the path of a horizontal circle. By thus arranging the ploughs, the ploughing up and pulverization of the soil is to be effected by simply passing over it once; 2d, in having each of the rods H, which support the ploughs, turn slightly on a fulcrum pin *f* at the centre of their length, in the path of a vertical circle, and combining therewith an inclined semi-circular way K, (i K and h K repre



sent the inclined parts of said way,) for the end of said rods to move under, and to be depressed as the ploughs revolve. Thus the ploughs enter the soil when they come alongside or *commence* to pass round in *front* of the vertical revolving shaft, and are thrown out of contact with the same when they commence to pass round to the back of said shaft; and by this means the inventor means to avoid all liability of the ploughed soil being disturbed by the ploughs in passing behind the shaft; 3d, in employing a gang of circular cutters J on the ends of the arms H which support the ploughs, which cutters revolve together with the ploughs as well as on their journals. These cutters are to cut up and pulverize all weeds and other obstructions which might tend to choke up the ploughs.

*Claim.*—The arrangement and combined operation of the ploughs I I I I, cutters J J J J, and semi-circular way K, substantially as and for the purposes described.

No. 12,398.—IRA REYNOLDS.—*Improvement in Ploughs*.—Patented February 13, 1855. (Plates p. 26.)

The share *m* is reversible; the rear portion, being left straight and flat, forms the nut for the screw tap *n*, and is so arranged that when the share is reversed the screw tap *n* will fit either side, while the straight flat portions will correspond with the face of the mould board.

The coulter consists of two blades *j j'*, both exactly alike. It is fitted with its apex into the inclined notch of the plate K, and has two other bearings, one in the notch *l* and the other on the surface at the point *s*. As soon as fitted in, and when forced back by the operation against the earth, it secures itself firmly in place on the three several bearings.

The inventor says: I am aware that plough points have been constructed with oblique shoulders, a corner of which was made to bear somewhat like the shoulders in my plough point.

But I *claim*, first, the laterally extending shoulder *r' r'*, drawn back against and somewhat between the two shoulders *r r*, in order to hold the point securely in place, and prevent the breaking of the shank *t* near the shoulder, in the operation of ploughing, substantially as set forth.

Second. I claim the arrangement of the within described reversible steel share, as secured to the face of the mould board, by means of a screw bolt inserted from the lower side, the female screw being formed in the steel share, as set forth.

Third. I claim the reversible self-fastening coulter, constructed, secured, and arranged in manner and for the purposes set forth.

No. 12,466.—DAVID RUSSELL.—*Improvement in Spade Ploughs*.—Patented February 27, 1855. (Plates, p. 26.)

A A' are bars which are secured to the double crank *a a* at their upper ends; the bars are secured by means of four connecting rods *b* to a stationary crossbar *c*, the rods *b* working freely on joints. The

lower ends of bars A A<sup>1</sup> are provided with cutters *d d*, which are set at a proper pitch to enable them to enter the surface easily.

The inventor says: I am aware that upon a revolving horizontal cylinder both movable and fixed spades have been arranged to dig up the soil; therefore, I do not claim such devices.

But I *claim* the cutter bars A A<sup>1</sup>, said bars being provided with cutters at their lower ends, and operating in the manner and for the purpose set forth.

No. 12,627.—THOS. J. HALL.—*Improvement in Ploughs*.—Patented April 3, 1855. (Plates, p. 26.)

The cutter B swivels in the beam A, and is supported by an arm near its edge so as to follow the direction of the point of the beam.

The inventor says: I do not claim a cutting wheel in connection with a plough, as this has been done repeatedly.

But I *claim* so hanging the cutter to the beam that it may swivel therein, in combination with the supports at the edge of the wheel, substantially as set forth and described.

No. 12,650.—NOAH WARLICK.—*Improvement in Ploughs*.—Patented April 3, 1855. (Plates, p. 27.)

This plough can be adjusted to cut at an angle more or less oblique to a horizontal plane by loosening set screw *e*, and inserting a block between the beam and front prong, as shown by dotted lines in fig. 1. By removing pin *g* and bringing hole *j* opposite hole *f*<sup>1</sup>, the plough is made to cut at an angle less oblique.

The inventor says: I do not claim the whale lance-shaped point separately.

But I *claim* the whale lance shaped point D, having a notch in its upper side to receive the lower end of the coulter, in combination with said coulter and the Y shaped adjustable double brace C C<sup>1</sup>, as set forth.

No. 12,791.—THOMAS J. HALL.—*Improvement in Gang Ploughs*.—Patented May 1, 1855. (Plates, p. 27.)

The cross-beams E E<sup>1</sup>, which slide in guide grooves D, in the uprights C C, can be raised or lowered by means of cords *a*, shaft *a*, and crank *c*, and secured at a desired height by pawl and ratchet *e d*. The plough-beams F are pivoted to the front cross-beam E, and rest with their rear ends (weighted with adjustable weights G) in open mortises cut in the rear cross-beam E<sup>1</sup>, so as to be free to rise with the plough attached to it, should it be thrown out of the ground. At both the front and rear of the plough-frame A B are two levers L M, having their fulcrata at *n*, the inner points of the levers being kept in contact by a spring *m*. The outer ends of the levers have pins *o*, which pass through holes in the uprights C, into the cross-beams E E<sup>1</sup>, to hold

them in place after they have been adjusted by means of the cranks and cords as above said.

The inventor says: I do not claim a gang of ploughs, nor do I claim the hanging of the ploughs to hinged or pivoted beams; these being well known.

But I do *claim* the arrangement of the ploughs and pivoted beams, with the adjustable cross-beams, so that the ploughs may have a convenient permanent adjustment, in connexion with their self-adjusting property in the plough-beam, as set forth and described.

No. 12,838.—E. C. TAVENNER and O. NESMITH.—*Improvement in Ploughs*.—Patented May 8, 1855. (Plates, p. 27.)

The mould-board J not being cast in one piece with the standard *a*, the mould-board, when worn out, can be replaced by a new one.

The fend-off K is formed of a grooved piece, conforming to the shape and lapping around or resting on each side of the front edge of the coulter L, and is connected with the standard *a* by a stay-rod *m* and nut *f*. The shank S of the coulter does not pass *through* the draft-beam *o*, but is adjustably attached to the land side thereof by stirrup and nuts *g g*. The fend-off is intended to obviate the clogging of the coulter, because of the convex surface of the fend-off, which prevents the soil from hugging or sticking fast.

The inventors say: We do not claim the lip piece *b b*, toe piece S, or grooved rest piece *c*.

But we do *claim* the land side plate *a a a a*, in combination with the fend-off or cleaner K K, constructed and arranged substantially in the manner and for the purpose set forth.

No. 13,082.—L. G. EVANS.—*Improvement in Ploughs*.—Patented June 19, 1855. (Plates, p. 27.)

By means of nuts *h<sup>1</sup> g* the position of all the parts below the beam may be adjusted, either to make the plough run shallow or deep, or to give it more or less land, as desired. The mould-board *d* is made adjustable by means of screws *e e<sup>1</sup>*, having pivot nuts *p p<sup>1</sup>*, the latter being attached to the upper part *f* of the land side, and the screws *e e<sup>1</sup>* to the mould-board. The other end of the mould-board is secured to the standard *h* by means of set screw *l*.

I *claim*, connecting and arranging the mould-board *d*, land side *m*, and coulter *c*, in such a manner that they are together capable of a vertical and lateral adjustment, in addition to the particular adjustment of the mould-board, as described.

No. 13,191.—NICHOLAS WHITEHALL.—*Improvement in Ploughs*.—Patented July 3, 1855. (Plates, p. 27.)

The driver, seated on seat W, can regulate the action of the ploughs A, by means of operating the handles O. The dotted lines represent the ploughs and handles when depressed.

The inventor says: Disclaiming all the devices separately considered, I *claim* the arrangement and connexion of the handles O O, arms M M, plough-beams C C, and seat W, for the purpose of operating ploughs, in the manner and for the purpose set forth.

No. 13,228.—ADONIJAH PEACOCK and SIMON PEACOCK.—*Improvement in Attaching Cast Point to Steel Mould Boards of Ploughs*.—Patented July 10, 1855. (Plates, p. 27.)

The inventor says: We *claim* nothing new in the form of the solid cast metal point which we use, except the recess or shoulder at B C, fig. 1, for the purpose of attaching the steel part of the mould board to the cast point; the balance of the point being similar in principle to the point of a cast mould board in common use, with all its bolts and screws.

We *claim* nothing new in the steel mould board which we use, except cutting the point off at B C, fig. 2, which is generally done at a distance of from six to eight inches from A, fig. 1, for the purpose of attaching to the cast point at B C.

We *claim*, in the manufacture of mould boards for ploughs, the use of a solid cast metal point, as described, in connexion with steel or other wrought metal mould boards for ploughs when united therewith, as described, or any way equivalent thereto, so as to form of the two parts a mould board, the greater part of whose surface is steel or other wrought metal, and the point or front part of solid cast metal as a wearing point.

No. 13,493.—JNO. L. GILL.—*Improvement in Ploughs*.—Patented August 28, 1855. (Plates, p. 27.)

Figure 1, view of the plough from the mould board side.

Figure 2, view from the land side.

Figures 5, 6, and 7, views of the single parts of the ploughs.

Figure 4, view from the underside of the share.

The inventor says: I am aware that a combined steel and cast-iron mould board has been used, and also that a cast standard has been used; these I do not claim. Neither do I claim any of the parts used separately.

But I *claim* a plough composed of a steel mould board, cast-iron share, sheath, and land side, when the several parts are arranged as set forth.

No. 13,653.—HARRISON NORTON.—*Improvement in Ploughs*.—Patented October 9, 1855. (Plates, p. 27.)

The nature of this improvement will be understood from the claim and engravings. Fig. 1 represents two positions of the parts referred to in the claim, one in full and the other in dotted lines.

*Claim*.—Attaching the share E to the mould board C and "land side" D of the plough, by a hinge or joint, and moving said share by means of the bar G and lever H, or their equivalents, substantially as shown and described.

No. 13,865.—THOMAS A. CHANDLER.—*Improvement in making Plough Mould Boards*.—Patented December 4, 1855. (Plates, p. 28.)

Roller B moves on eccentric journals C C'. The curved clamp plate D has the shaft E' E' secured to it; the journals E' E' are parallel to journals C C'. Lever G is jointed to D in H. The cam end of lever G presses against roller B; by which arrangement of the lever with the clamp plate, the clamp plate is operated in securing the steel plate to the roller, and relinquishing it in the process of being formed into a mould board. The press plate J moves upon journals K K; these journals and the edge of the plate are parallel to the face of roller B and its journals; L lever attached to J; L lever attached to journal C. The steel plate, properly heated, is placed on roller B, the edge of which is passed under the clamp D, and held by the action of lever G, on plate D; the press plate J is then pressed on the heated plate by lever M; then by turning the roller (by means of lever L) backward and forward, according to the width of the plate being formed, it is bent into the shape of a mould board. By placing the steel plate more or less obliquely to roller B, a longer or shorter curve may be given to the mould board with the same sized plate.

*Claim*.—The forming eccentric roller B, clamp plate D, with the cam lever G, and the press plate J, when constructed, arranged, and operated, substantially in the manner and for the purpose set forth.

No. 13,822.—AARON A. MARCELLUS.—*Improvement in Potato Digger*.—Patented November 22, 1855. (Plates, p. 28.)

The plough A enters below the potatoes and brings them on its broad share, when the teeth of the revolving rakes *a* draw them up the separator and deliver them into one of the buckets *d* of the receiver *o*. As soon as the bucket is full, so as to overcome the weight of lever E, the receiver will make part of a revolution, and the potatoes fall to the earth in a heap.

The separator C, which has a slight vibratory motion, is composed of rods united by a cross-bar at front and rear; the rods are so bent as to form an undulating surface, to break up the earth more perfectly.

*Claim*.—In combination with the revolving rakes, the undulating surfaced separator C and receiver O, when arranged in the manner and for the purposes set forth.

No. 12,169.—EMILE SIRRET.—*Improvement in Rakes*.—Patented January 2, 1855. (Plates, p. 28.)

The rake is made in two sections D D, which are united together by collars *a a* on the ends of the vibrating treadle E E, and at their ends by thin plates *b*, in such manner that either one or both of them can be turned a short distance so as to adapt the teeth to the undulations of the ground. When the driver, for instance, depresses the front end of the treadle E, (which turns on fulcrum *d*,) the rear ends, with the collars and the rake, will be depressed thereby, (by means of the resistance of the hay,) elevating the teeth into the position shown in figure 1, in dotted lines, which will prevent their front end from running against the hill.

The jointed treadle F G turns on fulcrum *d g*, and serves for discharging the hay as fast as the rake collects a bundle. When the operator depresses its front end, the back forked F end will assume the position shown in figure 1, in dotted lines, and bear upon the hay collected, and hold it down to the ground until the rake teeth revolve from under it, which will occur as soon as the driver depresses both treadles E and F G; the weight of the hay, and the power applied, causing the rake teeth to take into the ground, and the forward motion of the horse, with the resistance offered by reason of the teeth passing into the soil, causing the rake head to revolve, and the lower set of teeth to revolve backward from under the hay, and allow it to fall to the ground in a bundle. As soon as the hay is discharged, the treadle F G and the rake are caused to assume their common position ready for another operation by a spring *h*.

*Claim.*—The inventor says: I am aware that the treadle E is not new; and, therefore, I make no claim to it. But what I do claim as my invention, and desire to secure by letters patent, is:

1st. A revolving rake, having the head made in two sections, and arranged and operating essentially as herein described.

2d. In combination with the same, the employment and arrangement of the jointed forked treadle F G, substantially as and for the purpose set forth.

No. 12,396.—S. N. STILLMAN and W. F. STILLMAN.—*Improvement in Garden Rakes.*—Patented February 13, 1855. (Plates, p. 28.)

To secure the teeth C in the head A of the rake, circular holes are bored in it on its under side about two-thirds the way through; the larger ends of the teeth are inserted in these holes, and circular wedges D are dipped in glue and driven into the holes.

*Claim.*—The new manufacture of garden rake described, viz: a rake having curved metal teeth inserted and fastened into the head, as set forth.

No. 12,547.—ALEXANDER H. GASTON and JOSEPH SMITH.—*Improvement in Rakes and Elevators.*—Patented March 20, 1855. (Plates, p. 28.)

The apparatus is attached to the wagon W by means of arms E K. The rollers *x x* spread the belts at the bottom of the machine for raking. The hay, being elevated by the rakes L, is caught by the revolving forks P, and thrown on the wagon.

*Claim.*—The endless belts D D and rakes L, in combination with the rollers X and revolving forks P P, for the purpose of raking and loading hay, as set forth.

No. 13,596.—THOMAS N. LUPTON.—*Improvement in Rakes for Reaping Machines.*—Patented September 25, 1855. (Plates, p. 28.)

The gear wheels *k g* transfer motion to crank *e*, whilst wheel *j* (on the axle of wheel *k*) works the wheel *h* on collar *f*, and a pinion fast on the collar gears into a pinion attached to the sleeve socket L, thereby revolving the latter. The collar *f* is attached to the slide socket *q*, so

that the latter revolves together with *h*. The pitman *s* is pivoted to the sliding arm *r* in *z*. The bevel gear *n p* actuates the rake, which latter is caused (by means of the described arrangement of parts) to maintain a parallel position relative to the sides of the machine and the grain platform, while it sweeps across the platform.

The inventor says: Being well aware that cranks, pitman rods, and gear devices have been employed as elements, in part, of the mechanical construction of grain harvesting machines, I do not claim such devices separately.

But I *claim* the construction of an automatic rake, having a revolving tubular or sleeve socket *L*, with a revolving extension or reciprocating piston rod *m*, a slide socket *q q*, with a sliding arm *r r*, and a geared rake device *W W*, in combination with the collar *f f*, the whole being constructed and operated substantially as described.

No. 12,632.—WM. J. KEENEY and JAMES R. TARBOX.—*Improvement in Rakes and Hay Elevators*.—Patented April 3, 1855. (Plates, p. 29.)

Figure 2 illustrates the working of the spring prongs *K<sup>11</sup>*, which, when resuming their original position, after every passage of slot *N*, throw the hay resting on them against apron *F*, or on the wagon being loaded. The axle *P* is, at the place where pinions *Q Q* are fixed upon it, elongated into hub *U*, and furnished with clutch *W*, which, if wheels *A* and *B* revolve in the direction of the arrow, falls into the notches *X* cut into hub *U*, thus carrying axle *P* and pulleys *L* and the endless rake in its revolution, while one or both of the wheels revolving in an opposite direction, the clutch slides over the inclined planes of the notched hub, leaving axle *P* and the endless rake at rest.

*Claim*.—The combination of the apron *F*, endless belt *M M*, and elastic clearers *K<sup>11</sup>*, either alone or in connexion with two driving wheels, clutches, and a rake placed behind for the purpose of raking and elevating hay, as set forth.

No. 12,750.—HENRY CHATFIELD, assignor to HENRY CHATFIELD and THEODORE L. SNYDER.—*Improvement in Rakes*.—Patented April 17, 1855. (Plates, p. 29.)

*a* are the tines, *g* their heads provided with square holes, *d* the square bolt, *c* the head of the shank provided with a similar square hole, *b* the washers.

This arrangement allows to replace broken teeth, and to increase or lessen their number.

*Claim*.—Constructing the teeth on tines of a rake or fork separately with square or an equivalent form of apertures through the heads thereof, and uniting them by a single bolt accurately fitting and passing through all the said apertures and through a similar aperture in the shank of the instrument, the teeth or tines being kept at suitable distances apart by washers or blocks placed upon the bolt between them, or by enlarging the heads thereof for the same purpose; the whole being secured firmly together by a nut screwed upon the end of the bolt, or in any other suitable manner.

No. 13,490.—OLIVER C. GREEN.—*Improvement in Harvester Rakes*.—Patented August 28, 1855. (Plates, p. 29.)

The fender-board L prevents the grain from passing back of the grain platform, and its upper edge, being bent over, serves as a guide or way for a friction roller at the end of an arm *m*, fastened to the rake. During the movement towards the driving-wheel D, the said friction roller passes on the under side of said guide-way, thereby confining the rake to its work and preventing it from being raised above the grain. Immediately before the rake commences its return motion, the friction roller ascends the incline M, and passes then (during the return motion of the rake) along the top edge of said guide-way, so as to keep the rake sufficiently high to prevent its coming into contact with the grain. The head-block G of the rake slides on way *b*, and is moved from the driving-wheel by means of the device S O Q.

The inventor says: I am aware that the delivery of grain at right angles to the line of draft of the team has been accomplished by means of a rake travelling across the platform, in conjunction with a second rake turning in a segment of a circle; and, therefore, I do not claim the described delivery of grain, irrespective of the means by which it is accomplished.

But I *claim*, in rakes to harvesters, the combination of the rake I, sliding-head G, way or guide B, fender-board L, and inclined plane M, or severally of their equivalents, operating in the manner and for the purpose set forth; so that with a single rake I accomplish the raking of grain across the platform, and the delivery thereof, in the manner substantially as set forth.

No. 13,033.—WM. P. GREENLEAF.—*Improvement in Fastening Scythes to Snaths*.—Patented June 12, 1855. (Plates, p. 29.)

The toe D is placed in one of the holes B; the scythe is then turned back so that notch C fits over that part of bolt E that is between the bolt-head and the snath. By turning the nut H the scythe is fastened.

The inventor says: I do not claim separately any of the parts or devices used by me in it.

But I *claim* the mode of fastening scythes to snaths, by the employment of the ferrule *a d*, at the end of the snath, the bolt E, the nut H, the notch C in the shank of the scythe, the toe or claw D of the scythe, and the perforated guide plate G, constructed, formed, shaped, arranged, and operating, as described and set forth.

No. 13,496.—BENJAMIN F. JOSLYN.—*Improvement in Scythe Fastening*.—Patented August 28, 1855. (Plates, p. 29.)

It will be seen that the shank B can be firmly secured to the hoop C, by simply forcing the point of screw E against the end *e* of lever D.

I *claim* the arrangement of the lever D, as applied to a hoop *c*, as set forth, as a means of securing the shank of the scythe to the end of the snath.



No. 13,697.—CYRUS CLAPP.—*Improvement in Scythe Fastening*.—Patented October 23, 1855. (Plates, p. 29.)

The fastening of the scythe *g* to the snath *A*, by means of ferrule *b*, and other parts referred to in the claim, will be understood from the claim and engravings.

*Claim*.—The fastening of scythes to snaths by means of the concave socket *d d*, (figure 4,) and section of a ball *e e*, (figure 1,) to which the scythe *g* is attached, and the centre bolt *f*, as described; the whole being arranged substantially as and for the purposes specified.

No. 13,105.—JAMES SELBY.—*Improvement in Seed Drills*.—Patented June 19, 1855. (Plates, p. 29.)

The inner ends of two reciprocating slides meet at the centre of the hopper, which is provided with a partition. The slides *E* have apertures *c* arranged in pairs, and between each two is a pin *d*, which pins project through the openings *e* in the bottom of the hopper *D*. Slides *f* are underneath *E*. The shaft *H* and crank *j*, when rotated by means of gearing *F G*, imparts a reciprocating motion to the slides *E*, by means of connecting rods *l*. The crank can be elongated or shortened, and fastened by set screw *k*. The seed passes through *e* and *c*, in quantities regulated by placing the slides *f* further in or out, so that the narrower or wider parts of *f* will be underneath the apertures, and consequently allow of the escape of a greater or smaller quantity. I are the usual tubes for conveying the seed to the ground.

*Claim*.—Distributing the seed by means of the transverse slides *f*, in combination with the reciprocating slides *E*, operated by means of an adjustable crank formed by the sliding bar *j*, as shown and described.

No. 13,135.—MOSES D. WELLS.—*Improvement in Seeding Machines*.—Patented June 26, 1855. (Plates, p. 30.)

By the vertical adjustment of the agitator *B*, the teeth *f* will be caused to protrude more or less through the seed escape slot *a*, and thereby a greater or less quantity of seed will be allowed to escape. At the extremities of the agitator, and held in place by the pins *m*, are sliding plates *p*, moving with the agitator, and keeping the slot at its extremities always covered; the pins *m* passing through the openings in the plates *p*, permitting the vertical movement of the agitator.

The inventor says: I make no claim to the serrated agitator, when susceptible of a longitudinal movement only.

But I *claim* the serrated agitator, adjustable vertically within the slot *a*, substantially as described, for regulating the discharging capacity of the machine, as set forth.

I also *claim* the supplemental slider *p*, arranged and operating as described, for enabling the agitator to preserve a constant reciprocation under all changes of discharge capacity, as specified.

No. 13,373.—LUCIAN N. BIGELOW.—*Improvement in Seeding Machines.*—Patented July 31, 1855. (Plates, p. 30.)

The hopper F is arranged above the screen D<sup>1</sup>, and has an aperture G through the whole length of its bottom. By means of the slide H, placed under the hopper, and the rod I, which can be shifted in the notches K on standard J, the quantity of grain falling into the screen can be regulated or entirely confined in the hopper. A similar slide L underneath the screen serves to regulate the quantity of grain falling from the screen on to the ground.

I *claim* the use of a screen, for the purpose of sowing grain broadcast, so arranged with a feeding hopper and slides, as to regulate the quantity of grain to be sown, when acted upon by trip-hammers, to secure its uniform and proper distribution, in the manner set forth.

No. 13,530.—C. STEPHENSON and G. STEPHENSON.—*Improvement in Seeding Machines.*—Patented September 4, 1855. (Plates, p. 30.)

The seed falls from hopper H, through slide I, over deflecting plate l, and upon the concave bottom of box E. The shaft L, having a reciprocating motion, works the tube L<sup>1</sup> up and down, thereby conveying seed from the concave bottom to the seed tube F.

We *claim*, distributing or conveying the seed from the box E to the conveying spout F by means of the tube L, with plate a<sup>1</sup> attached; the tube being secured within a shaft L, which has a reciprocating rotary motion.

No. 13,664.—H. R. SMITH.—*Improvement in Seeding Machines.*—Patented October 9, 1855. (Plates, p. 30.)

As the machine is drawn along, the wheels H I revolve in the direction of the arrows, and the recesses b (which can be made of desired capacity by slides regulated by set-screws d) take the seed from the hopper F and carry it round, (in contact with the wheel I,) until it drops on to the guard J and down the seed tube G.

*Claim.*—The combination of wheels H I with the hopper F, when arranged substantially as shown for the purpose specified.

No. 13,781.—E. DARWIN CURTIS.—*Improvement in Seeding Machines.*—Patented November 13, 1855. (Plates, p. 30.)

When the seed is to be sown broadcast, the valve i is placed midway between the two prongs of the distributing tube I; but when the seed is to be sown in drills, the valve is turned to close one of the prongs, as represented in the engraving.

The inventor says: I do not claim the distributing tube made with forks or branches, for the better distribution of the seed in sowing broadcast, as such has been done; nor yet, of itself, irrespective of its construction, arrangement, and operation, substantially as specified,

the combination of a leaf or flap-valve with a distributing tube for governing the discharge of the seed.

But I *claim*, providing the forked distributing tube with a wedge-shaped flap-valve *i*, arranged in relation to the forks as and for operation in the manner and for the purposes substantially as specified.

No. 13,893.—MOSES D. WELLS.—*Improvement in Hand Seed-Sowers*.—Patented December 4, 1855. (Plates, p. 30.)

The seed distributor consists of bar B, having at intervals, corresponding with the slotted openings in the bottom of the hopper, the cross section of a double inclined plane, with the ridge slightly below the upper surface of the bar; this bar being reciprocated in guides beneath, and in contact with the bottom of hopper A, so as to close the slots where the double inclined planes are from under them, and open such portion thereof for the discharge of seed as the inclined planes pass under.

If desired to limit the discharge of seed, then the bar B is not permitted to move far enough to carry the entire inclined plane under the slot; lever C being stopped by a pin *g* in one of the holes *i* of strap I.

*Claim*.—Effecting the seed discharge, and regulating the amount of the same, by means of the double inclined planes *f* of bar B reciprocating without the hopper, the adjustment and operation being substantially as described.

No. 13,986.—REUBEN HURD.—*Improvement in Seeding Machines*.—Patented December 25, 1855. (Plates, p. 30.)

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I do not claim the employment of an endless belt or elevator, with its cup or buckets for taking the seed from the hopper and depositing it, by the inversion of the buckets, down a conveying tube to the hollow share; as such, under a different construction, arrangement, and operation of parts, has before been done.

But I *claim* the arrangement, substantially as shown and described, of the elevator or belt, with its buckets or seed cups *m*, with the conveying spout M, and seed box F, the latter being provided with a spring-valve Q, or movable bottom, opening upwards; and the said cups or buckets passing through said bottom, exclusively in or during the upward travel of the elevator, as specified.

No. 12,760.—PALMER LANCASTER.—*Improvement in Implement for Shearing Sheep*.—Patented April 24, 1855. (Plates, p. 31.)

The object of this improvement is rapidity of operation, and prevention of mincing or cutting the wool twice, or cutting the animal.

The handle C, which is attached to sliding frame B, is moved back and forth, and thereby the shears are worked in the manner apparent from the illustration.

*Claim*.—The construction of the implement as herein shown and described, viz: Having a series of cutters *f* work over a series of stationary cutters *h*, the cutters *f* having a vibratory movement given them by means of the reciprocating frame B, rake D D<sup>1</sup>, pinions F F<sup>1</sup>, with pawls *d d* attached to them, and spur-wheel G, pinion H, and crank pulley I; the pinions F F<sup>1</sup> being placed loosely on the shaft E of the spur-wheel G. The above parts being arranged as shown, and operating in the manner and for the purpose as set forth.

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No. 12,341.—JOHN BEAN and BENJAMIN WRIGHT.—*Improvement in Smut Machines*.—Patented February 6, 1855. (Plates, p. 31.)

By having the air go through the smut-scourers and revolving-screens, it assists the purifying operations. C is the screen-case of the separator; the grain, after it has been passed through the separator, is placed in receiving box R, to be operated upon by smut-cone P. M N are the revolving-screens.

The inventors say: We do not claim the leading of a draught through the smut-scourers and revolving-screen, irrespective of the manner of effecting the same.

But we *claim*, supplying air to the fan E of a separator, the shoe of which is arranged in connexion and at right angles with a smut machine, by causing said air to pass through the smut-scourers and revolving-screens of said smut machine on its way to the fan, as described, and for the purpose set forth.

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No. 12,254.—JOHN A. PITTS.—*Improvement in Straw Cutters*.—Patented January 16, 1855. (Plates, p. 31.)

K is the bar over which the straw passes out, and against the side of which the knives *g* cut shear fashion. The end *h* of said bar is curved so as to fit over the shaft *f* of the cutter wheel I, and is placed between the hub of it and a collar *i* on said shaft, to keep it from traversing on said shaft. The other end *k* of the bar bends around so as to clasp the rim of the wheel, and can be properly adjusted by set-screws *n n*, which bear against the said rim of the wheel.

*Claim*.—So combining the cutting-wheel and bar, as that the edges of the cutters must always pass the bar at a fixed adjustable distance whether the tendencies to force the cutters from the straw be great or not

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No. 12,331.—GEORGE L. SQUIER.—*Improvement in Straw Cutters*.—Patented January 30, 1855. (Plates, p. 31.)

The inventor says: I do not claim, separately, the circular cutters or knives, for they have been used for analogous purposes.

But I *claim* the combination of the circular cutters or knives *b b*<sup>1</sup> and finger plates E, with the fingers *d* attached to them, when said cutters and finger plates are secured the proper distance from each other on their shafts B B<sup>1</sup>, by means of the rods D D<sup>1</sup> and nuts *c c*<sup>1</sup>, as shown and described.

No. 12,407.—JAMES H. BENNETT.—*Improvement in Straw Cutters*.—Patented February 20, 1855. (Plates, p. 31.)

This improvement consists in so arranging a flat spring G over the front part of a vertical slot C, and arranging and bevelling the knife E, that when the knife-lever D is lowered, the knife will be caused to bear upon the side of said spring, and the under side of the lever against the top of the spring. Thus, as the knife is lowered, lateral pressure is exerted upon it, and it is kept close to the guard plate c in order to perform a perfect cut. After the cutting is performed, the spring, by its upward pressure, aids in raising the knife-lever.

*Claim.*—The use and arrangement of the double-acting spring, in combination with the arrangement and bevelled shape of the knife, substantially as and for the purpose set forth.

No. 12,683.—WALTER LACKEY.—*Improvement in Straw Cutters*.—Patented April 10, 1855. (Plates, p. 31.)

A flange or flanges A A are arranged between the heads B B, the edges of both to correspond with each other; they are so placed as to pass close by the stationary knife C, which is adjustable by screws i. D D are the feed-rolls.

The inventor says: I do not claim the self-feeding flanges working against a stationary knife, as described by A. S. Macomber in his patent, granted November 5, 1850; nor do I claim the particular form or arrangements of the parts.

But I *claim* the use of the heads B B when made to correspond with the flange or flanges, to facilitate the setting of them, and prevent their striking over the stationary knife or bed.

Also, the flanges, in combination with the heads, working against the stationary knife, as above set forth.

Also, the combination of the flanges, heads, stationary knife, and feed-rolls, as described, or any other substantially the same.

No. 12,694.—IRA ROSE.—*Improvement in Straw Cutters*.—Patented August 10, 1855. (Plates, p. 31.)

Shaft G, and with it cam H, being revolved, the yoke I, and with it knife D, receive a vertical reciprocating motion. The same cam H imparts intermittent motion to arm J, which is alternately drawn back by spring L. Arm J rocks the shaft K, which, by means of lever M, pawls, and ratchet-wheels N, transfers an intermittent motion to the feed-rollers C C.

The inventor says: I do not claim the feed rollers, neither do I claim the knife; for these are well known and in common use.

But I *claim* the combination of the cam H, yoke I, and lever J, with the rock shaft K and pawls M M, the above parts being constructed, arranged, and operating in the manner and for the purposes as herein shown and described.

No. 12,696.—DAVID RUSSELL.—*Improvement in Straw Cutters*.—Patented August 10, 1855. (Plates, p. 32.)

Figures 1 and 3, representing the moving parts in two different positions, illustrate fully their mode of operation.

*Claim*.—1st. Knives A A, in combination with the double crank B and lever C, thereby giving to the knives an oscillatory reciprocating motion, by which means I obtain two shear cuts of the knives at each revolution of the double crank B, as herein described and claimed.

2d. The cam-lever K and crank B, in combination with the lever J and pawls *b b*, ratchet H and feed-rollers G G, for the purpose of feeding the straw or other material to the knives, as set forth.

No. 12,699.—THOMAS C. SIMONTON and LOREN J. WICKS.—*Improvement in Straw Cutters*.—Patented April 10, 1855. (Plates, p. 32.)

Cylinder C being rotated, the knives D D, as they rotate, cut the straw as it passes between their edges and the under surface of bed F, which moves forward by the pressure of the knives as they bear against it, and is alternately drawn back by spring G between each two cuts. The knives and bed, by their operation, give the proper feed motion to the straw. The feed motion may be modified, so as to cut the straw longer or shorter, by adjusting throat-piece I.

The inventors say: We do not claim the adjustable throat-piece I, for that has been previously used; neither do we claim separately the cylinder C, with knives D D thereon, for they also have been used.

But we do *claim* the combination of the cylinder C, with the knives D D attached to its periphery and vibrating bed F, constructed, arranged, and operating in the manner and for the purpose as herein shown and described.

No. 12,974.—FRANCIS FITZPATRICK.—*Improvement in Straw Cutters*.—Patented May 29, 1855. (Plates, p. 32.)

B is the rock-shaft, and R the knife, attached by means of arms *c*; *a* is the straw-box.

*Claim*.—Arranging the rock-shaft B, on which the arms and knife are so placed as to give a draw cut in front of the straw-box, and distant therefrom so that the tendency of the knife to push away from or leave the straw shall be resisted or met by the ends of the arms in a line parallel to the thrust, and thus be held up to the straw, whilst the mouth of the straw-box is unencumbered by any machinery to prevent the feeding up of the uncut, or delivery of the cut, straw, as represented.

No. 13,137.—HENRY PECKHAM.—*Improvement in Straw Cutters*.—Patented June 26, 1855. (Plates, p. 32.)

The knives G and H are hung upon pivot I, so as to be swung or carried around it by means of pivots J J (at the opposite ends of the

knives) traversing in slots K L in the rotating disc M. The knives cut the straw as they pass by the face-plate F.

*Claim.*—One or more knives hung on a pivot, in combination with a revolving disc, or its equivalent, carrying one or more slots, so as to operate the knife or knives, substantially as described and for the purposes set forth.

No. 13,215.—LYMAN CLINTON.—*Improvement in Straw Cutters.*—Patented July 10, 1855. (Plates, p. 32.)

The nature of this improvement will be understood from the claim and engravings.

When the knives are in the position represented in dotted lines, they commence to act on the straw, draw it out, cut it, and discharge it.

The inventor says: I do not claim, as new, placing knives or cutters on revolving winged arbors, irrespective of the peculiar arrangement herein shown of the grooves or rebates at the edges of the wings.

But I *claim*, placing knives or cutters F on the wings *b* of two revolving arbors or shafts C C, when the edges of said wings have rebates *c* cut in them, so as to form lips or ledges *d* opposite the cutting edges of the knives or cutters, for the purpose as shown and described.

No. 13,385.—DEWITT C. CUMINGS.—*Improvement in Straw Cutters.*—Patented August 7, 1855. (Plates, p. 32.)

The knives 7 cut upward against the under edge of plate 6. The feed-rollers 5 5<sup>1</sup>, in pressing the material between them, loosen the dirt, which, on its passage from the rollers to the cutting edges, falls beneath the machine, instead of being mixed up with the cut straw as in other straw cutters.

The roller 5<sup>1</sup> receives its motion from pinion 5<sup>3</sup> by means of an universal coupling 4, which will allow the roller 5<sup>1</sup> to accommodate itself, in its spring bearings 9 9, to the varying quantity of feed from side to side of the feed-box. The pinion 5<sup>3</sup>, being hung in a yoke 8, will always remain in gear with pinion 5<sup>2</sup>.

The inventor says: I do not claim the upward cut in itself, as that has been done before.

But I *claim*, first. The upward cut, when the material is fed in by a distinct device for that purpose, by which the dirt is separated from the straw or other material to be cut, passing out beneath the feed-rollers, instead of collecting on the stationary guard or cutting-plate, substantially as and for the purposes specified.

Second. Operating the moveable feed-roller by means of a spur-wheel hung in a vibrating frame or yoke, with a universal coupling for connecting its axis with that of the roller, when said roller is supported on spring-bearings independent of each other, substantially as and for the purposes specified.

No. 13,509.—JOHN A. THOMPSON.—*Improvement in Straw Cutters.*—Patented August 28, 1855. (Plates, p. 32.)

The disc cutter A, the shaft of which is attached to the gate E, rises and falls with the gate, and at the same time receives a rotary motion through the pinion C on the disc shaft and the rack D fastened to the stationary frame R of the straw cutter. Thus the disc cutter rises to allow the straw to be fed in, and then descends, passing through the straw with a rotary motion, which gives to it a drawing cut.

I *claim* giving the cutting disc of a straw cutter a combined rotary and reciprocating motion, in the manner set forth.

No. 13,718.—LUTHER B. FISHER.—*Improvement in Straw Cutters.*—Patented October 30, 1855. (Plates, p. 32.)

Frame *i* being operated by crank *c*, one end of knife *h* will alternately be higher than the other end of it, and *vice versa*. (See position represented in dotted lines.) The straw is fed forward by the side motion of the knife, which is caused by the pin *k*, at one end of the knife working in an oblique groove in the side piece *q*. The object of rock-shaft *p* is to cause both pieces *n n* (to which the lower knife *m* is secured) to vibrate equally as they move with the knives.

*Claim.*—Ear *k*, in combination with angular groove *q*, pieces *n n*, and rock-shaft *p*.

No. 13,807.—LOREN J. WICKS.—*Improvement in Straw Cutters.*—Patented November 13, 1855. (Plates, p. 33.)

The curvilinear motion of the knife E, which makes it self-feeding, will be understood from the claim and engraving.

The inventor says: I do not claim the elastic or self-adjusting throat, as that has been heretofore used; neither do I claim the adjustable throat to govern the length of the cut.

I *claim* hanging the knife to a crank shaft J and to a pivoted pitman H, for the purpose of giving it the curvilinear motion described.

No. 13,849.—JOHN A. KRAKE.—*Improvement in the Method of Hanging the Screens of Winnowing Machines.*—Patented November 27, 1855.—(Plates, p. 33.)

The screen *a* is hung on arms A A, and the screen *h* on arms B B. This method of hanging the screens, which will be understood from the engravings, admits of a side to side motion, and no other. The spaces at the sides of the upper shoe *q* and the sides of the machine are closed with a thin casing *p* extending horizontally from the front edge of the apron C to a point directly above the rear edge of the same. The shoe *a*, in its motions from side to side, works close to and above these casings, thereby preventing the escape of the blast from the fan as it passes along the upper apron to and through the screen, where light substances are separated from the grain.



*Claim.*—The peculiar arrangement and combination of parts described, by which the action of the screens is confined exclusively to lateral vibratory motion, for the purpose specified.

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No. 12,158.—LEVI DEDERICK.—*Improvement in Ox Yokes.*—Patented January 2, 1855. (Plates, p. 33.)

Beam B connects two neck blocks A (of which the engraving represents only one); C is the centre bolt, and D the flanged thimble, which is screwed into the neck-block, together with the bolt C, and secured by wood screws *a*. The bolt passes up through the beam and receives a key E on the upper side of the beam; thus the surface of the block, which rests directly upon the neck of the ox, is left whole and smooth.

The inventor says: I am aware that a patent has been granted to Albert Vose for a semi-revolving neck-block; but my mode of fastening the block I regard as an improvement upon that invention.

Therefore, what I *claim* is the flanged thimble for securing the centre bolts of separate vibrating neck-blocks from the upper side, and thus avoid perforating the wood on the underside, which rests upon the neck of the ox, as described.

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No. 12,925.—JOHN TUCKER.—*Improvement in Ox Yokes.*—Patented May 22, 1855. (Plates, p. 33.)

The boxes, in which the bows are placed, approach towards and recede from the centre of the yoke, by sliding freely upon a rectangular frame which is attached to the centre box of the yoke; the boxes in which the bows are placed being severally guided by a geared rack operating upon a pinion in the centre of the yoke.

*Claim.*—The blocks in which the bows are set, constructed so as to slide up on the rods *d d*. etc., as above set forth, in lieu of having them slide upon the under side of the beam to prevent injury, as set forth.

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No. 13,472.—JNO. WOODWARD.—*Improvement in Horse Yokes.*—Patented August 21, 1855. (Plates, p. 33.)

E and E<sup>1</sup> are the hame connexions; A the beam.

The inventor says: I do not claim a horse yoke, consisting of two eveners or horizontal bars, a connecting or vertical bar, two sets of harness and hame connexions, arranged at the upper and lower ends of the harness; such being represented in the patent of Elijah H. Dantforth, granted July 28, 1846.

I *claim* constructing and arranging the hame connexions with respect to a single beam, whereby such hame connexions may be attached to the middle of the hames instead of at their ends, and thereby render but one bar or bearer necessary to connect the harness and the pole of a carriage.

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## II.—METALLURGY.

No. 12,237.—JOHN S. ADDISON.—*Improved Gold Washer and Amalgamator*.—Patented January 16, 1855. (Plates, p. 34.)

The engraving, in combination with the claims, fully explains the nature of this improvement.

The inventor says: I do not claim the employment of a trunk into which the ore, dirt, or silicious matter, containing the metal to be extracted, is fed, to meet an ascending column of water, as described; nor the operating of the scraper by a water-wheel driven by the entrance water, either of itself or connected with other devices.

But I *claim*, first: Placing such a trunk I above a box D, which forms a receptacle for the gold or other metal separated in the trunk, and which contains a proper quantity of quicksilver for amalgamating the said gold or metal, and also a water-wheel G, which is driven by the entrance into the said box of the water which is to form the upward current in the trunk, for the purpose of giving motion to a scraper H to agitate the quicksilver to promote amalgamation, all substantially as described.

Second. I *claim* the arrangement around a trunk into which the pulverized ore, quartz, &c., is fed, to meet an ascending current of water which flows through and over the trunk of one or more troughs K M to contain quicksilver, and a corresponding number of over-hanging rims J L situated above them in such a manner, substantially as described, that the flow of water, ore, etc., over one rim falls into the middle of the quicksilver in the trough below it, and keeps the same properly agitated to amalgamate with it the whole or some portion of the gold or metal contained in the overflow, as fully set forth.

No. 13,645.—SAMUEL GARDINER, Jr.—*Improved Amalgamator*.—Patented October 9, 1855. (Plates, p. 34.)

The mineral matter (in a pulverized state) is fed with a stream of water between the rollers E E, which, revolving in the quicksilver trough, are kept constantly coated with quicksilver, which, being spread over a large surface, has ample opportunity for collecting the gold from the pulverized material. The overflow of the water carries the matter over the sides of trough F, and presents it in a thin sheet over the surface of the rollers A, revolving in quicksilver troughs C C. By this means it is expected every particle will be brought into contact with the quicksilver, and all the gold amalgamated; the foreign matter will be washed away by the water overflowing the shelves D. The jets of water, from the cylinders A, are to keep the cylinders clean, and keep the matter from packing between the rollers.

I *claim*, first: The hollow perforated rollers A A receiving water at

their journals, and discharging it in small streams all over their peripheries, and revolving in opposite directions in a trough or troughs of quicksilver, so that their upper parts are constantly approaching each other, and having the auriferous and other metalliferous matter fed above or between them, all substantially as described.

Second. The arrangement of the amalgamating rollers and the distributing rollers and troughs, substantially as shown and described, whereby the matter is fed equally on both amalgamating rollers and on the descending portion thereof.

No. 13,879.—EDWARD N. KENT.—*Improvement in Amalgamators*.—Patented December 4, 1855. (Plates, p. 24.)

The earthy matters, containing gold or silver, are supplied by means of a current of water passing from pipe *m* into pan *H*, in which they are stirred up and suspended in the water by the teeth attached to the arms *I*, and are carried thence by the current of water through the small feeding tubes *l l* into the centre of the large body of water contained in vessel *E*, and directly in contact with the mercury on the bottom, the surface of which is kept constantly clean by the revolving action of the paddle wheel *h h* on the shaft *k*, (the shaft being revolved by band and pulley,) which also causes an outer current in the space between the wheels and the sides of the vessels into which the earthy matters are thrown by the revolution of the paddle-wheels, thus allowing the heavy metallic portions to fall by virtue of their greater specific gravity, and remain in contact with the clean mercury until amalgamated, while the light earth is rapidly washed away.

The inventor says: I do not wish to be understood as making claim broadly to an apparatus for the separation of gold or silver from foreign substances, which consists of a vessel containing a column of water with mercury at the bottom, and with agitators above the mercury, and in which the substances to be separated are supplied below the surface of the water, and below the discharge.

I do *claim*, the employment of double action paddle-wheels, which rotate on their own axis, and revolve about a vertical axis, substantially as described, within, and in combination with, a column of water in a vessel having the discharge at or near the top, substantially as specified and for the purpose set forth.

And I also *claim*, sustaining the paddle-wheels in the column of water from above, and causing them to rotate on their axis by the weight of the heavy pan resting on the peripheries above, that mercury may be supplied, in combination therewith, at the bottom and below the wheels, substantially as and for the purpose specified.

No. 12,484.—GUY H. HUBBARD.—*Improved Auger Hundle Fastening*.—Patented March 6, 1855. (Plates, p. 34.)

The ring *C* is placed with the narrowest parts thereof resting upon the pin *E*, and the shank *D* of the tool is inserted, with the notch *G* entered upon the catch *F*; then, by causing the ring *C* to revolve in

part around ferrule B, and then causing the inclined edge thereof to operate against pin E, ring C is pressed against the shank, and hence presses said shank firmly upon catch F.

The inventor says: I do not claim the ferrule B, which has been previously employed.

But I *claim* the ring C, constructed, arranged, and operating in the manner and for the purpose set forth, or other manner substantially the same.

No. 13,025.—ANTHONY POLLAK.—*Improvement in Wrought Iron Beams and Girders*.—Patented June 5, 1855. (Plates, p. 34.)

The object of this construction is an increase in strength and stiffness from a given quantity of material.

*Claim*.—The combination, in wrought or malleable iron beams or girders, of top and bottom T pieces, with flat or plane surfaced longitudinal plates, riveted upon both sides of the stems or vertical portions thereof, substantially as described and for the purposes specified.

No. 13,599.—RICHARD MONTGOMERY.—*Improvement in Corrugated Beams*.—Patented September 25, 1855. (Plates, p. 34.)

The object of making the sheets (forming the beams) of such a shape, that one or both series of the arches shall be thicker than the straight portions of the said beams, is to make them stronger than they would be if made of uniform thickness and of the same weight.

*Claim*.—A supporting beam, formed of sheet metal of unequal thickness, bent into a series of folds, substantially as represented and set forth.

No. 12,289.—ABEL W. STREETER.—*Improvement in Fastening Centre Buis*.—Patented January 23, 1855. (Plates, p. 34.)

To insert the bit, the cam C is placed in the open space (see figure 2) on a side of the socket at right angles with the catch E; then insert the shank of the bit, entering the notch F upon the catch E, and then, by a quarter revolution of ring D, bring the cam upon the side of the shank opposite notch F and catch E, when the cam, by pressing upon the shank B, will firmly secure the shank upon the catch, and, consequently, confine the same within the socket.

The inventor says: I do not claim the invention of a moveable or revolving ring as a means of operating a bit fastening, the same having been previously employed.

But I *claim* the stationary catch E, in connexion with the cam or bearer C, for the purposes specified; the whole being combined, arranged, and operated, substantially as set forth.

No. 12,262.—JOHN T. WILLMARTH.—*Improved Dies for making Bolts*.—Patented January 16, 1855. (Plates, p. 34.)

The bar R of square iron, of the size of the head of the finished

bolt, is heated, and entered between the dies  $a a^1$ , (which are moved alternately towards and from each other,) when they are at their greatest distance from each other. The bar is continually rotated during the operation of the dies upon it.

The advantages of this form of dies are stated by the inventor as follows:

1st. The iron being operated upon both sides of the head at once, the latter is not forced away from the dies, as is the case when operated upon on one side of the head at a time, and thus a determinate quantity of iron is thrown into the shank of each bolt, and the necessity of cutting off the end of the latter, to reduce the bolts to a uniform length, is avoided.

2d. The iron being gradually cut away all round the head, the fibres of the metal are not distorted.

3d. The shank is never out of centre with respect to the head.

*Claim.*—The dies  $a a^1$ , constructed as described, or in any manner substantially equivalent thereto, for the purpose of operating simultaneously upon both sides of the head, as set forth.

No. 12,815.—ROBERT CRICHTON.—*Improvement in Machines for Making Bolts.*—Patented May 8, 1855. (Plates, p. 34.)

The bar R, having been entered between the jaws  $a a^1$  and  $b b^1$ , is held firmly by said jaws  $a a^1$ . The horizontal heading die J is forced towards the bar R by means of the cam N, which, as it revolves within the sash M, forces the shaft L forward and against shaft K. The die flattens the end of the bar R against the inner side of the forming dies  $b b^1$ , and forms a rude head. The four lateral heading dies C then move simultaneously toward the head, and form it into a square shape. The die J is then drawn back by means of spiral spring  $g$ , the spring acting upon it, when the shaft L is drawn back by the cam N. The die J is prevented from being drawn too far back by a stop  $h$  attached to one of the bearings  $e$ .

The inventor says: I do not claim the adjustable shaft L, the detached shaft K, the spring  $g$ , or the stop  $h$ ; these having been known and used separately before.

But I do *claim*, the combination of the adjustable shaft L, the detached shaft K, the spring  $g$ , and stop  $h$ , with the sash M, and horizontal heading-tool J, to regulate the quantity of iron in, and thickness of, head, as herein shown and described.

No. 13,241.—WM. E. WARD.—*Improvements in Machines for Making Bolts.*—Patented July 10, 1855. (Plates, p. 35.)

The bolts pass down between two inclined ways  $b b$ ; the shanks of the bolts, between the ways and the heads, resting on the ways. The foremost bolt, arriving at the semi-circular end  $c$  of the ways, will hang in a nearly vertical position, with the lower end inclined a little forward, as the weight of the series of bolts on the ways will push the lowest one a little beyond the lowest part of the curved portion  $c c$  of the

ways. A wing  $d$  is thus brought, by an end movement, between this foremost and the rest of the series of bolts. Wing  $d$  is fast on a rock-shaft  $f$ , which (by means of cams, levers, &c.,  $i k m n$ ) receives first an endwise motion, so as to separate the foremost bolt, as already mentioned, and then makes a quarter revolution, so as to bring the wing, with the bolt on it, to a horizontal position. The bolt is then transferred by spring-nippers  $w$  to the jaws  $h^1 h^1$ , which present it to the rolling operation. In the meantime the wing  $d$  returns to its original position, and is drawn back so as to enter afterwards again between the next bolt and the rest of the series, and to repeat the operation already described. The wing and shaft  $f$ , while turning back, is drawn back by cam  $p$ , arms  $q^1$ , and  $s$ , on vertical rock-shaft  $r$  and collar  $z$ . The nippers  $w$  are on arm  $x$  of rock-shaft  $y$ , which latter is drawn endwise by weight  $a^1$ , to bring the nippers over the bolt, and it is pushed back to transfer the bolt by cam  $b^1$ , on cam-shaft  $j$ , acting on lever  $c^1$ . The nippers are moved twice up and down, to first gripe and then deposit the bolt, by the notches 6 and 7, in cam  $e^1$ . The bolt is griped by jaws  $h^1 h^1$  jointed to cross-bar  $i^1$  on the end of mandrel  $j$ . The jaws are opened by springs  $k^1$  and closed to gripe the shank just within the head by a cone  $l^1$ , which is slid back on the mandrel for that purpose by spring  $m^1$  interposed between the mandrel and cross-bar. A shoulder on the cone is acted upon by a lever  $n^1$ , (jointed to adjustable rod  $o^1$ ), which is operated by a tappet  $p^2$  on wheel  $p^1$ , so that the jaws will spring open as the nippers present the bolt; and as the tappet passes instantly to cone, is immediately pushed back by spring  $m^1$  to gripe the bolt as the nippers rise and leave it. The square mandrel  $j^1$  is fitted to slide and turn with rock-shaft  $q^1$ . The mandrel is turned a quarter revolution by weight  $v^1$  acting on lever  $u^1$ ; link  $t^1$ , and arm  $s^1$  on shaft  $q^1$ , and turned back by cam  $w^1$  acting on  $u^1$ , &c.; all this for the purpose of presenting the several angles of the bolt to the rollers, to reduce the end of the bolt to the required cylindrical shape. The mandrel and jaws are drawn towards the segment rollers (that the bolt may be brought to the required position for being rolled) by means of the mechanism  $y^1 x^1 z^1 c^2$ ; the bolt held by the jaws having been introduced between the segment rollers  $g^2 g^2$ , it is free to be moved back by the rollers as they act on it. The mandrel and jaws are drawn back by cam  $e^2$  acting on friction roller  $f^2$  on rod  $z^1$ . The rollers consist each of a segment groove to reduce the end of the stem of the bolt to a cylindrical form. This machine being intended to make bolts, in which that part of the shank next to the head is square and the rest cylindrical.

I *claim*, in the before described machine, the mode of operation substantially as described, for drawing or rolling, to a cylindrical shape, the end of the stem of square bolts, by means of the segment rollers, in combination with the jaws, or equivalent therefor, on the sliding rotating mandrel, operated by an arrangement of mechanism such as described, or any equivalent therefor.

I also *claim* the mode of operation, substantially as described, for taking the bolts from the feeding-ways, or any equivalent device by which they may be supplied, and bring them to a horizontal, or nearly horizontal, position, by means of a vibrating wing, which enters back

of the bolt to be separated, and then vibrates to bring it to a horizontal, or nearly horizontal, position, in combination with the transferring pincers, or any equivalent therefor, by which they are transferred to the jaws; the required motion being imparted by an arrangement of mechanism substantially such as described, or any equivalent therefor.

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No. 13,117.—MARVIN S. OTIS, assignor to CHAS. RUMLEY.—*Improvement in Machines for Boring Cylinders*.—Patented June 19, 1855. (Plates, p. 35.)

H is a carriage for carrying the cylinder back and forth to bring its interior from end to end under the operation of the cutter. On the top of this carriage is a second carriage I in slides b, which latter are transverse to the motion of the carriage H. Two plates J are clamped to the cylinder, and one of the plates carries the wrist-pins for the arms K, through the other end of which arms the mandrel E passes, which carries the cutter F. As the centres D, on which the mandrel E is hung, are eccentric with the axis of said mandrel, consequently the cylinder will perform a transverse reciprocating motion during each revolution of the mandrel (by means of the said eccentricity of the mandrel and the arms K). The object of this arrangement is to produce an elliptical bore.

*Claim*.—The arrangement of the parts substantially as described, so as to produce an alternating transverse motion of cylinder, in combination with a rotating movement of the cutter, or *vice versa*, substantially as set forth.

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No. 13,780.—RANSOM COOK.—*Improvement in Making Boring Implements*.—Patented November 13, 1855. (Plates, p. 35.)

Dies, figs. 2 and 3, are to be secured in a trip-hammer; figs. 5 and 7 in a press; figs. 8 and 9, the same; and figs. 11 and 12 in a small trip-hammer.

The piece of steel, fig. 1, when heated red hot is first operated upon by dies 2 3, which will produce the shape represented in fig. 4; the dies 5 and 7 will produce the shape fig. 6; the dies 8 and 9 will reduce it to the form represented in fig. 10. The plate is then twisted in the usual manner, and the lips turned as shown in fig. 13. The plate is then reheated, and the lips bent into shape in part around a small rod, when the implement is placed between dies, figs. 11 and 12, and turned around while the hammer is quickly moving, thus finishing the head of the implement. See fig. 14.

The inventor says: I am aware that some dies have been used in the manufacture of augers, but differing entirely from mine, and not accomplishing the same purposes.

I therefore merely *claim* the method described, of forging and shaping the lips and heads of the particular kind of boring implements set forth, by the successive stages of die stamping, substantially in the manner described.

No. 13,218.—SELDEN S. HARTSHORN.—*Improvement in Buckles*.—Patented July 10, 1851. (Plates, p. 35.)

I *claim* the improvement in the manufacture of buckles composed of two pieces, when constructed substantially as described.

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No. 13,907.—SHELDON S. HARTSHORN.—*Improvement in Buckles*.—Patented December 11, 1855. (Plates, p. 35.)

The nature of this improvement will be understood from the engravings.

*Claim*.—Constructing the tongue and loop of the buckle in one part, and at one operation, in such a manner that the socket *a* will firmly secure the joint *b* in the other part so as to need no other fastening, as described.

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No. 13,695.—THEODORE ACKERMAN, assignor to H. H. HOMAN, WILLIAM MUHLE, AND THEODORE ACKERMAN.—*Improvement in Casting Tea-Pot Spouts and Handles*.—Patented October 16, 1855. (Plates, p. 35.)

This invention refers to the casting the usual hollow trimmings of Britannia and other like ware, which, being fusible over an open fire, is cast in a mould of more refractory metal.

The engravings represent the cope employed to form the base of the spout. The metal *a* is lined with an inner tubing of plaster *c*, whose margin *c'* is formed to agree with the curves of the parting. The effect of this is, that the cold and quickly conducting metallic parting surface of the cope, coming in contact with the stock, imparts to the base of the spout a sharp well-defined edge, of exactly corresponding thickness and contour; because all of the stock which flows against the slowly heat conducting lining runs off with the rest of the unappropriated stock. By this means there is given to the casting a margin closely adapted to the pot body, and requiring the least possible amount of solder.

*Claim*.—The use of an inner non-conducting layer to the metallic interior surface of the cope or sprue-gate of a tea-pot spout mould, or analogous object, in the manner and for the purpose described.

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No. 13,948.—EBER JONES.—*Improvement in Moulds for Casting Bells*.—Patented December 18, 1855. (Plates, p. 36.)

*A* is the outer, *B* the inner shell, provided with vents *a*; *E* is the sweep, and *b* are its journals. The shape of the sweep gives the form to the outside of the mould, and the mould to the bell. *c* is the clay on the inside of the shell; and it will be perceived that every portion of the shell *A*, which would come in contact with or touch the inner shell, when the two are placed together, is covered with clay; and a precisely similar course is pursued with the inner shell *B*, where *C*



also represents the clay. Before the clay is moulded on to the shells, there are no guides or marks by which the two shells are placed together. The guides are moulded with and from the same centre with the bell itself, and the space between the flasks, which forms the bell, must of necessity be uniform.

*Claim.*—The so making of flasks for casting bells, the bodies of which are made of metal, that the guides, by which they are put together, shall be turned or moulded from the same centres, from which the flasks themselves are coated with the lining or covering of clay or loam; and forming said guiding surfaces, where they are constantly under the ready inspection of the moulder, substantially as described.

No. 12,439.—AMMI M. GEORGE.—*Improvement in Machines for Making Chain Links.*—Patented February 27, 1856. (Plates, p. 36.)

The plate F receives a sliding reciprocating motion by means of pitman E, and imparts the same motion to arm (which is made fast to plate F) and to former I, which is attached to arm G by a bolt K. As the former I moves inward, it rotates the dies N N<sup>1</sup>, which are geared together by cog-wheels O, and the link is formed around I. When F G and I move outward, the end of lever H (which is pivoted to G in a) strikes and ascends the inclined plane Q, and its forked end H<sup>1</sup> H<sup>1</sup> is depressed, and throws the link *f* from the former I.

*Claim.*—The arrangement of the forked lever H, confined to the arm G, in relation to the inclined plane Q and former I, and operated for relieving the former of the link, as set forth.

No. 13,929.—EDWARD WEISSENBORN.—*Improvement in Chain-Making Machines.*—Patented December 11, 1855. (Plates, p. 37.)

A detailed description of this machine would occupy too much room to be given in this report. The general features of the improvement can be well understood from the claims and engravings.

The left hand bearing K of roller L being moved away, and the roller L<sup>1</sup> being raised up, the ring *r*, heated to a welding heat, is slipped over the left hand end of roller L, and is moved up to the right hand end of the roller, and hung in its groove; after which the bearing of L is replaced, and the roller L<sup>1</sup> brought down close to it. The ring being then grasped firmly between the two rollers, by whose rotary motion it is caused to revolve between them, and travel along towards the left hand end, and by that means being gradually more and more compressed by the constantly diminishing size of the grooves, is properly welded and finished with a smooth surface.

*Claim.*—1st. The employment, for welding the rings, of two rollers, grooved spirally in opposite directions, and operating substantially as described.

2d. Arranging one of the end bearings K of one of the spirally-grooved welding rollers, so as to be capable of sliding lengthwise to the roller, substantially as described, far enough to allow the ring to be shipped over the end of the roller.

3d. The manner described, of raising, depressing, and confining the upper roller to allow the ring to be slipped over the lower roller, to wit, by means of the rods  $n^1 n^1$ , the yoke N, the springs  $n n$ , and the cam-shaft P, with the cams  $n^2 n^2$ , the whole being arranged and operating substantially as set forth.

4th. The travelling-box R, operating substantially as described, to carry the rings quickly over the end of and up to the back end of the welding roller L, and to come back with the ring at a speed properly corresponding with the velocity of the rollers and pitch of the spiral grooves.

5th. I claim the carrier  $z$ , operating substantially as described, first, to move forward to receive the ring in its fork, then moving quickly upwards to snatch the ring from the box, and afterwards dragging the ring along the plate which contains the elongating mechanism, till it comes in contact with one of the elongating parts, or its equivalent, and is thereby taken from the fork of the carrier.

6th. The combination of the movable parts  $v v^1$  and side dies  $w w$ , operating substantially as described, to elongate the ring, and, at the same time, close or drive towards each other the elongating sides.

7th. The arrangement of the dies  $w^1 w^1$ , round which the link is bent or doubled, substantially as described, relatively to the dies  $w w$ , by which the elongated sides of the link are forced towards each other; and their attachment to the same, whereby, when the link has received the form shown in figure 4 *a*, it is caused to be in readiness to be bent or doubled by the action of the hooks V V, or other equivalent.

8th. Operating the posts  $v v^1$ , by which the elongation of the wing is performed by means of a wedge or double inclined piece 21 attached to one of the side dies  $w^1$ , acting upon studs 22 attached to the slides which carry the said posts, whereby the approach of the side dies towards each other, and retreat of the posts from each other, are effected simultaneously.

9th. The suspension of the bending hooks at their pivot  $z$ , and application of a spring to draw their points apart, substantially as described, so that the said hooks will descend in an open state, and will be in condition to receive the link when the latter is sufficiently elongated; but that in ascending and drawing up the ends of the link they will gradually close, as required by the changing form of the link.

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NO. 12,311.—JAMES EATON.—*Improvement in Dies for Cop-Tube Machines*.—Patented January 30, 1855. (Plates, p. 37.)

Longitudinally through the centre of the dies there is a dove-tailed groove *a*, and transversely across the centre of the same is the recess *b*. The block *c* is firmly secured to the die within recess *b*, and receives set-screw *d*. The steel step *f* is slidden into recess *b*, and by means of screw *d* is forced out, so as to project beyond the face of the die at *g* an amount equal to the thickness of the tin of which the tubes are made. When worn away it is withdrawn from the slot, and after having been dressed up is again set up to the spindle by the screw *d*.

*Claim.*—In machines for making cop tubes, the method described, of securing the step to the die, for the purpose set forth.

No. 12,669.—STEPHEN M. CATE and EDMUND JORDON.—*Improved Arrangement of Dies and Stocks for Ornamenting Metal Tubes.*—Patented April 10, 1855. (Plates, p. 37.)

The die stocks E F G H can be turned round their longitudinal axis, to adjust the planes of the rotations of the dies *e* to any desired angle with the axis of the hollow shaft I. This angle is more accurately determined by means of the graduated heads *a* and pointers *a*<sup>1</sup>. When the die stocks are properly set, they are fastened in their position by means of bands M and nuts *d*. The square shanks *b* of the die-holders pass through the central square hollow in the die stocks, and are adjustable therein by screws *c*.

The inventors say: We are aware that a series of stationary dies have been long used to ornament tubes, and that revolving dies have been used for ornamenting articles while in a lattice, and that revolving dies have also been used where the article has been drawn through by a process like that of wire through a "draw-plate," or for welding iron tubes, etc., and that adjustable holders are not new; we therefore do not claim any of the parts, as such, as our invention.

But we *claim*, the combination of the adjustable die stocks E F G H, with the revolving dies *e e e e e* in a self-feeding machine for ornamenting tubes, etc., when the whole is constructed, arranged, combined, and made to operate substantially as herein described.

No. 12,735.—JOHN T. WILLMARTH.—*Improvement in Dies for Bolt Forging Machines.*—Patented April 17, 1855. (Plates, p. 37.)

The dies *b b*<sup>1</sup>, when closed together, form a short cylindrical space *r*, which flares out conically. The diameter of the cylindrical space *r* corresponds to that of the finished bolt. This flaring form is to prevent the edges of the dies, when coming together, from cutting the iron and throwing out a sprue at the sides. The iron, which is to be drawn down by these dies, has already received the form represented in fig. 6, by an operation which formed the subject of a patent previously granted to the inventor. The iron being inserted, as seen in fig. 2, is continually rotated and gradually withdrawn, till the bolt is finished, as seen in fig. 3.

*Claim.*—The tapering conical dies *b b*<sup>1</sup>, constructed and operating in the manner substantially as herein described, for the purpose set forth

No. 12,265.—WM. LEIGHTON, assignor to the NEW ENGLAND GLASS Co.—*Improvement in Door Knobs.*—Patented January 16, 1855. (Plates, p. 37.)

The inside of the hollow glass knob E is coated with pure metallic silver, after which the opening through the shank *e* is sealed up so that

the knob will be permanently secured in the cap *c*, (*d* being the cement,) and oxydizing agents are excluded.

The inventor says: I am aware that hollow glass knobs have been lined with quicksilver, and that glass has been coated with pure silver for various uses; but I am not aware that a cheap door-knob has ever been produced, having the color and brilliancy of polished silver, rendered durable and free from liability to tarnishing or abrasion, by protection from the action of chemical or mechanical agents.

Therefore, I *claim* the hollow silvered knob sealed up and protected, as set forth, as a new and highly ornamental manufacture.

No 12,320.—WM. H. McNAMEE.—*Improvement in Locking Spindle Door Latches*.—Patented January 30, 1855. (Plates, p. 38.)

The latch *A* is inserted in the bored hole in the edge of the door, (represented by the horizontal dotted lines,) the hole being of the diameter of the knob *a* upon the latch, and being sufficiently deep leaving the end *b* or hammer of the latch protruding to make a catch. The spiral-spring pressing against the hammer offers a resistance to the raising of the latch. The spindle *C*, being moved by knobs attached to it, presses with its widened part (which is just underneath the latch) the latch upward. The projecting arm *e* on the spindle rests against the side of the door, the fork part of the bolt *D* being across the arm, the handle or arm of the bolt being secured by a hole in the escutcheon rim; the escutcheon being screwed upon the door performs in locking the spindle.

*Claim*.—The guides *g* and the rim *f* of the escutcheon; the shelf *d* on the face-plate; and the upright stem, enclosed with a spiral wire, working through the shelf piece *d*; the projecting arm *e* on the spindle, and the forked bolt *D*, the whole combined for the purpose of a latch and lock, as described.

No. 12,675.—BENJAMIN R. FAMES.—*Improvement in Portable Door Fasteners*.—Patented April 10, 1855. (Plates, p. 38.)

The hooked bar *B* is to be attached to the door frame *J*, the brace *G* being in the position represented in fig. 1, in broken lines, during the closing of the door, and thus acting as a gauge for the position of the attaching bar. When the door is closed and lips *l* driven home, *G* is moved into the position shown in full lines. The grasping of this brace by compensator *C* (which compensator is a spring) is to prevent its movement about *a* without applying force on the inner side. When the space between door and jamb is wide, the compensator is also inserted between. (See fig. 3.)

The inventor says: I expressly disclaim hooked bars with separate and vertically moving stops and braces; as such form no part of my invention.

But I do *claim* as new, and of my invention, the herein described combination of bifurcated hooked bar *B*, spring compensator *C*, and horizontally moving brace *G* the compensator and brace movable about

the vertical connexion of said bar, whereby the self-movement of the brace is prevented, while it performs the double function of gauge and brace.

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No. 13,473.—ALONZO E. YOUNG, assignor to HIMSELF and MARK WORTHLEY.—*Improvement in Door Knob*.—Patented August 21, 1855. (Plates, p. 38.)

A B are the knobs; D D collar-plates, to be screwed to the door and serving as washers; C shank provided with a male screw *c* and entering a female screw formed in knob A; the clutch consists of disc *e* provided with a hub *f*, and is capable of sliding on the quadrangular shank C, the hole of the disc fitting the shape of the shank; the disc enters a recess *h* in the knob A, and is fastened to it by screws *g*. If there are two or three of these screws *g*, the clutch can be fastened to the knob (by inserting said screws) at every rotary movement of the knob through an arc of 180 or 120 degrees. The turning of the knob, and its screwing or unscrewing consequent thereon, serves to adjust the distance between the two knobs to the thickness of the door. When the screws are in, the two knobs will turn together.

*Claim*.—The sliding clutch and its attachments applied to the shank and the socket and the movable knob, as set forth.

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No. 13,770.—AMOS WESTCOTT.—*Improvement in Door Springs*.—Patented November 6, 1855. (Plates, p. 38.)

The spring and lever are made fast to frame A, the upper edge of which constitutes the track over which the grooved wheel F passes, and which frame A is screwed to the door frame B over the door *d d*. The jointed lever C is pivoted at P nearest the hinge-post of the door, and its other end, nearest the lock-post, is furnished with friction wheel F. One end of spiral-spring I is fastened to the frame A, and the other end of it to an arm H pivoted to lever C at D. This arm is secured from being drawn forward by the spring by a dog K connected to arm H and ratchet R, projecting from lever C. The centre of the circular curve of the ratchet is at D. The movable end of lever C is connected by a strap L to a bent bracket M projecting from the door. The strap works upon pulley X, which revolves upon a pivot screwed into the ball W at the frame A. By means of this ball and the set-screw, with which it is fastened, the ball and pulley X can be set at any desired angle so as to have the pulley always horizontal, although the frame A may have a certain inclination. If the door is light, and little resistance to be overcome, the arm H is drawn back so as to be perpendicular; but when the door is heavy, the dog is to be detached and arm H to be turned forward to gain leverage.

*Claim*.—In this class of door springs adjusting the jointed levers, substantially as set forth, and also adjusting the pulleys, and for the purpose described.

No. 13,383.—JAMES CONNER and THOMAS NEWBY.—*Improvement in Machine Drills*.—Patented August 7, 1855. (Plates, p. 38.)

The drawing represents the lever N as confined by trigger S, in which position, it supporting the upper bearing of the vertical shaft K, said vertical shaft is thrown into gear with the cam-shaft M, and a rotary movement will be communicated to said shaft M, causing it to move the drill forward by the action of the scroll-cam. To govern the action of the drill, the machine is to be set so that the said cam-shaft will be thrown out of gear, and the drilling suspended at the required point.

The cam A<sup>1</sup> is so adjusted upon shaft M that it shall act upon the end of spring R at the proper time, moving the trigger S, releasing lever N, and throwing the cam-shaft out of gear, suspending the horizontal movement of the drill-stock, the action of the drill in drilling, and also recoiling the cam-shaft by the action of spring c<sup>1</sup>, causing it to assume a position to commence action upon the end of the drill-stock again.

*Claim.*—The use of the lever N, vertical shaft K, spring and trigger R and S, spring Z, and cam A<sup>1</sup>, by which the action of the drill in drilling is regulated or governed in its depth, arranged and operating substantially in the manner and for the purpose set forth.

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No. 13,766.—SAMUEL W. SHRYOCK.—*Improvement in Drilling and Boring Machine*.—Patented November 6, 1855. (Plates, p. 38.)

The stuff to be bored, being placed upon table n, is moved upward against the drill e with a velocity according to the particular groove of the pulleys G and H in which the band d runs. As soon as the boring operation has been completed, the pulley G is uncoupled from its shaft, and the table n falls by its own weight.

*Claim.*—Supporting the rests n by rack F and pinion p of shaft E, and combining the same with movable and fixed pulleys G and H, as set forth, as that the rests may be moved upward with any required velocity, or be dropped from the drill at the will of the operator during the revolution of the boring-shaft, as and for the purposes specified.

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No. 13,845.—JOEL P. HEACOCK.—*Improvement in Drilling and Screw Cutting Machines*.—Patented November 27, 1855. (Plates, p. 39.)

Movement being given to pulley G, the pinion H actuates wheel E secured on mandrel shaft B, and thus the tool M is turned. To advance the tool, the strap Z is tightened on its pulleys Y and X, (by tightening pulley or other means,) causing the cone-pulley S to actuate strap K and pulley P. As soon as P commences to revolve, the nut, cut into its larger end, will act upon the screw-thread C upon the end of shaft B, and the shaft B and tool will advance until the ring N strikes the stop R, as will be described hereafter.

The proportion of drum X and pulley Y is the same as gear H and E; consequently their movement would be alike if uncontrolled, that is, if a pair of plain pulleys were substituted for P and S; but as they are conoid, and the sliding strap K is made to approach the small end of P and large end of S, the speed of P is increased, and thus the feed is given; and it is owing also to this difference of speed that the release or unlocking of feather  $a^1$  is obtained. To retract the mandrel and tool, (the cone P and nut therein being held still by the adhesion of the crossed strap K,) the gear H and E actuate the mandrel, and the male screw thereon, working in the nut, brings back the ring N, until it comes in contact with the end of feather  $a^1$ , (said feather passing freely through the spur E as a clutch,) and clamps the feather against the end of cone P, thus locking it and causing its movement. By throwing off strap X there will be no feed given to the mandrel, although the two cone-pulleys still turn by the clamping effect of the set ring; but the moment the strap is tightened, the clamping effect ceases, by the effect of P being proportionally greater.

*Claim.*—The use of pulleys P and S X and Y, set ring N operating conjointly on the feather  $a^1$ , in the manner and for the purposes set forth.

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No. 13,310.—HORACE HOTCHKISS.—*Improvement in Machines for Cutting Files.*—Patented July 24, 1855. (Plates, p. 39.)

The bed  $b$ , on which the blank  $i$  is held to be cut into a file, can be slid between dovetail guides (one of them adjustable by set-screws  $c$ ) on the lower bed  $b^1$ , which latter can be rotated on the bed-plate at  $d$ , and retained in any position by set-screws. Bed  $b$  is slid intermittently along by means of lever  $e$  on fulcrum  $e^1$ , which lever receives motion from eccentric  $e^2$  on driving shaft  $f$ ; lever  $e$  acting by means of rod  $e^3$  on arm  $e^4$ , axis  $e^5$ , arm  $e^6$ , and pawl  $e^7$ , which, taking in succession against the teeth of ratchet-wheel  $h$  on screw-shaft  $h^1$ , drives the screw-shaft round, and by reason of the screw-shaft passing through a screw-nut and bevel wheel  $h^2$  revolving in a bracket fixed to the side of bed  $b$ ; this bed  $b$  is moved along the guides on bed  $b^1$ , so as to present the blank  $i$  properly to the cutter. The cutter  $l$  has a slot through it, into which a pin on the holder passes, and upon which the cutter may move as a centre, and thus ensure its edge being placed on a level with the surface of the blank. This movement is of course only a slight one, and limited by guide projections on the holder. The cutter rests against a spring  $l^1$ . The cam  $o$  alternately raises the frame  $n$ , which slides in guides  $n^1$ , and is constantly pressed down by spring  $n^2$ . The tension of spring  $q$  (which is regulated by leverage  $q^5 q^4 q^3 q^2 q^1$  and roller  $q^1$  resting on the pattern  $m$ ) regulates the blow of the hammer  $p$ , which latter is alternately raised by a cam  $r$ . The inclination of the cutter and hammer is regulated by means of frame  $s$ , which carries the guides  $n^1$  and slots  $s^1$  and set-screws  $s^2$ .

*Claim.*—Supporting the file blank upon a compound carriage, having both a rotary and lateral adjustment horizontally, while the cutter is adjusted only in a plane passing through the apex of the cutter and

bisecting its edge, and is at the same time perpendicular to the edge of the cutter and to the plane of the file carriage.

Also, placing the cutter in line with the hammer, and in the same adjustable frame therewith, so that when the position of the cutter is changed by an adjustment of this frame, the hammer shall also be adjusted by the same operation to conform to the position of the cutter.

No. 12,594.—RICHARD G. HOLMES and WM. H. BUTLER.—*Improvement in Fire-Proof Safes*.—Patented March 27, 1855. (Plates, p. 39.)

The chambers, for holding up the filling, are formed by breaking brick into lumps of such size and irregular shapes as to touch each other and the sides of the safe. They do not present flat surfaces to each other, but touch in points. The interstices *b*, between the lumps *a*, constitute the cells which contain the filling.

The inventors say: We are aware that a compound of alum and clay has been used as a fire-proof filling for safes; also that brick, soft stone, layers of pumice, and other porous substances have been used for an interior fire-proof lining or shield for the like purpose; likewise, that in connexion with various soft porous fillings between the inner and outer cases of the safe, tubes, containing alkaline solutions, have been interspersed; none of such, therefore, do we claim; nor yet, as a more antiphlogistic compound, the combination of an alkali with alum.

But we *claim* a new and useful improvement in alum fillings of safes, or other fire-proof structures, essentially as specified, combining with an alum filling an alkali, in such proportions that the alum, in becoming heated or melted, has a part of its acid neutralized by the action of the alkali, when the said filling is interspersed with, and supported or restrained from settling down by cells *a* of porous or material, or frame work of porous substance arranged substantially as described.

No. 12,133.—JULIUS H. KROEHL.—*Improvement in Machines for Forming Flanges on Wrought Iron Beams*.—Patented January 2, 1855. (Plates, p. 39.)

This machine is to produce flanges of any desired taper or other shape, as for instance the one represented in figs. 3 and 4, consisting of tapered parts *l k* and *l' k'*, and a straight part *k k'*. The bar being introduced between rollers B B<sup>1</sup>, it gives motion to rollers C C by being in contact with them, and, by these rollers C C, has its flanges bent upwards over the sides of roller B<sup>1</sup>. Cams F F impart proper movement to levers E E, so as to cause the rollers C C to ascend or descend, or to remain stationary, so as to produce the desired shape of the flange.

*Disclaimed*.—The employment for forming or reducing metal bars of two pairs of rollers arranged as described, when the side rollers C C have no flanges or no movement in the line of their axis, or any of the rollers are otherwise constructed than as herein described.



*Claim.*—The combination of the wide and narrow rollers B B<sup>1</sup> and the flanged rollers C C, which have a movement in the line of their axis corresponding with the desired form of the edges of the flanges on the beam, for the purpose of finishing or smoothing the said edges, substantially as herein set forth.

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No. 13,514.—JOHN DEMAREST, assignor to the J. L. MOTT IRON WORKS.—*Improved Flask for Moulding Bath Tubs.*—Patented August 28, 1855. (Plates, p. 40.)

*b* represents a section of the tub when cast. The drag *a* is braced by bar *c* firmly secured to the sides of the drag; to the outside of the drag are secured clamps *d d* that extend above the upper edge, and these provided with screws *e e* to clamp the second section or cheek of the mould. The cope *i* is provided with a similar brace *k*, clamps *l l*, and screws *m m*. Thus the upper and lower sections are secured against yielding to internal pressure during the process of moulding and casting; the clamp screws also serving to adjust the mould so that the two sides of the tub will be of exactly the same thickness.

The wings *n*, attached to the cheek *g*, sustain the sand which is rammed in to form the sides of the mould, and are provided with recesses *q*, so that the sand between the several wings shall be united over these curved edges, and bind the whole to prevent caving in.

*I claim*, connecting by means of a brace or braces, the sides of the drag or first section, and of the cope or third section of flasks for casting bath tubs or other large and thin hollow vessels, substantially as described, in combination with the clamps and adjusting screws, or their equivalents, which embrace and act upon the sides of the cheek, or second section of the flask.

And I also claim, recessing the upper edge of the wings on the inside of the cheek, or second section of the flask, back of the inner edge, as specified.

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No. 12,282.—DANL. NEWTON.—*Improvement in Metal Folding Machines.*—Patented January 23, 1855. (Plates, p. 40.)

The movable part of the apparatus consists of a square bar *g* with one side circled over, and the other side contains a hollow with bearings 2 at each end. In the hollow are fastened a number of steel fingers *b* slightly bent. The plate 1 has its front edge *a*<sup>1</sup> bevelled off suitable for turning the fold. On the under side of the plate are fingers *c* exactly the same as those fastened in the hollow, with the ends reversed, so as to go under those in the hollow and bear alike on each other. In the hollow are two springs which bear against the plate 1 to raise it when it is drawn back. On the under side of the plate are fastened two gauges 4 to regulate the width of the fold. They are secured by screws 5. In the left end of the plate is a slot and pin *a* to secure a parallel motion of the plate. The handle 3 is hung by a bolt 8; the end over the plate contains a steel pin, which passes through the handle

and plate, by means of which, on moving the handle to the left, the plate is raised by the aid of the two springs, and by reversing the motion of the handle, the plate is drawn firmly to the metal whilst the fold is turning.

*Claim.*—The application to folders (for sheet-iron, tin, copper, &c.) of three or more pairs of steel fingers, all of the same shape, one-half of which are fastened to the plate which turns the fold, and the other half secured in a hollow underneath the same, the whole acting together, thereby drawing and holding the plate firmly on the metal whilst the fold is turning.

Also, the gauges attached to the plate, by which the width of the fold is regulated, substantially as described.

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No. 12,135.—WESLEY M. LEE.—*Improvement in Machines for Forging Car Wheels.*—Patented January 2, 1855. (Plates, p. 40.)

This improvement consists in making the face of the hammer-die with a series of flutes or swells extending from near the hub towards the rim in curved lines, or in lines tangent to some circle of less diameter than the rim of the wheel; when this is employed in combination with the turning (between each two blows) of the anvil or the hammer-die a portion of a revolution about equal to half of the space between the flutes, so that at the next blow the ridges of the die will strike on the ridges formed on the block of iron by the cavities of the hammer-die by the previous blow. These are the means to facilitate the spreading of the metal towards the periphery of the die-box to form a thoroughly compacted tread and flange.

In the figure the anvil is represented as being provided with cogs *j* all round, into which pinions *k k* gear, by which arrangement the proper revolution of the anvil is to be produced.

*Claim.*—Forming the face of the hammer-die with flutes or projections, substantially as specified, when combined with the turning of the die or anvil during the operation of forging or swaging, substantially as and for the purpose specified.

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No. 12,961.—SILAS S. PUTNAM.—*Improvements in Forging Machines.*—Patented May 29, 1855. (Plates, p. 40.)

D E F G are the four hammers, operated by cranks *h* and *i*, and the pitmans K L (the latter being made to yield at the time of each blow by means of a spiral-spring *q*, the object and operation of which will be understood from the engravings). Crank *h* acts on hammer G by means of pitman K L and forked connecting rod I; crank *i* acts on hammer F by means of the other pitman K L. The object and operation of the four connecting rods H, forming a parallelogram, will be understood without a more detailed description.

The inventor says: I do not claim the combination of an anvil, its hammer, and two lateral hammers made to operate together, so as to enable a bar, during its reduction by the hammers, to be compressed or reduced laterally by the side hammers.

But I *claim*, so combining four hammers together, by means substantially as described, that not only may two of them be approaching towards, while two are receding from one another, but that the momentum of the receding hammers may be brought into action upon the approaching hammers, so as to increase the effect of the blow or blows produced by them as stated.

I also claim two hammers, arranged to operate on two opposite sides of a bar, in combination with two hammers arranged to operate upon the other two opposite sides of each bar, each set operating alternately, and the four hammers acting on the four sides, and producing an equality of reduction of the bar, which cannot be obtained by an anvil to support it and three hammers operating upon the three unsupported sides of such bar.

I also claim, the described manner of constructing each of the connecting rods K L, in order that it may not only allow its crank to continue its movement when the hammers strike together, or upon a bar of metal, but relieve the cranks and connecting rods from the effects of the sudden blows given by the hammers.

No. 13,053.—WM. R. THOMSON.—*Improvements in Heating Wrought-Iron Wheels for Forging*.—Patented June 12, 1855. (Plates p. 40.)

The butts, which form the hub  $d^1$  of wheel  $d$ , are made in sections, having angular and curved sides, so that when put together and forged into a solid hub, they cannot slip apart or out of place. The sections or hub are heated by a peculiarly arranged furnace, which causes the heat to pass around and through the centre of the hub, from above and below alternately, as may be required; and when heated to a sufficient degree, the sections are welded into a solid hub, by the compressing and swaging action of the dies, conforming to the shape of the hub and spokes.

*Claim*.—The method of heating hubs for wrought-iron wheels, as described, the same being then forged and swaged, as set forth.

No. 13,434.—DANIEL NOYES.—*Improved Forging Machine*.—Patented August 14, 1855. (Plates, p. 40.)

The parts  $a$  and  $b$  of anvil B form a right angle with each other, the first being horizontal, and the other vertical. C C<sup>1</sup> hammer-shafts; the hammers F F<sup>1</sup> are pivoted to discs E E<sup>1</sup> on said shafts, F striking against  $a$ , and F<sup>1</sup> against  $b$ , and their movements being limited each by two stops  $j$   $k$ ; said movement being only sufficient to allow the hammer to be drawn lengthwise from the anvil by the continued revolutions of the disc after the blow is struck. In order to give a four blow, it is necessary that when the top hammer F strikes, the piece  $n$  being forged should be in contact with the face  $a$ , but removed from  $b$ ; and when hammer F<sup>1</sup> strikes, it should be in contact with  $b$ , but removed from  $a$ . The carriage employed to carry the piece and give it this movement consists of lever G working on fulcrum  $l$ , and connected by pitman H to a crank on a shaft revolving at the same speed as the hammer-shaft.

The piece is inserted through a hole in lever G. The motion imparted to the lever G by pitman H will bring the piece alternately to the faces *a* and *b*.

*Claim.*—1st. Attaching the hammer or hammers of a forging machine each by a pivot to a revolving disc or crank so as to revolve therewith, and controlling the position thereof by stops attached to the face of the disc or crank, in the manner substantially herein specified; whereby, after the hammer has been caused to strike on the anvil by the revolution of the disc or crank, it will be, by the continuous revolution thereof, drawn lengthwise off the anvil, to enable its revolution to continue for another blow, substantially as described.

2d. The employment of an anvil with a face forming the interior of a right angle, in combination with the hammers operating at right angles to each, against the said faces, substantially as described.

3d. The arrangement of the movable carriage or rest relatively to the two-faced anvil and the hammers F F', substantially in the manner described.

No. 12,770.—JOHN COMSTOCK, assignor to PETER NAYLOR.—*Improvement in Forge-Hammers.*—Patented April 24, 1855. (Plates, p. 41.)

When the operator presses down the end 8 of the lever *g*, the hammer is moved with a speed proportioned to the tightness of the belt 2; the cam *i* by its length giving a heavy blow, the force of which blow can be regulated by the screw shackle 20, and the spring *w* lifts the hammer again each blow; and when the forging is nearly complete, or requires but slight blows, the workman presses down the end 15 of the lever 13, which slides the cams *i* and *i* 1 along on the shaft *c*, and brings the cam *i* 1 into operation, which, being shorter than *i*, strikes a lighter blow, suited to finishing the forging.

The inventor says: I do not claim a tightening pulley in itself, as this is well known; but I am not aware that a tightening pulley and brake have ever before been used as herein set forth, by which the speed of the blow is regulated by the tightness of the belt, or the same is stopped entirely by the brake, while the motive power still propels the belt. And I am well aware that a hammer has been so set as to be drawn down to give the blow and then raised again by a spring; therefore, I do not claim the same in itself. And I am also well aware that different sized cams have been used for raising a forging hammer; therefore, I do not claim the different lengths of cams in themselves. But I am not aware that two or more cams of varying lengths have ever before been combined with a lever and adjustable screw shackle to pull down a hammer and give the blow, whereby I am enabled to use a definite amount of motion given by a cam to forge articles of various sizes, the screw shackle giving the facility for regulating the point to which the hammer is pulled.

*Claim.*—1st. The method herein described and shown for regulating the speed of the blows given by a forging hammer by the use of tightening pulley *e*, combined with the brake 11 applied to the fly-wheel *d*, substantially as specified.

2d. The method herein described and shown of regulating the amount which a hammer is *drawn down* to give the blow by rotating cams, by combining with said cams and hammer the adjustable screw-shackle 20 and lever *u*, the whole constructed and combined, substantially as specified.

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No. 13,179.—MILO PECK.—*Improvement in Trip-Hammers*.—Patented July 3, 1855. (Plates, p. 41.)

There are two slide valves P and T arranged on cylinder C, within which works a piston fastened to the end of the hammer-rod. The inner valve P is moved up and down by means of arm R, connecting rod S, and a crank on the main driving or sweep-shaft. As the hammer B drops, carrying with it the sweep-shaft, the inner valve rises so as to touch with its lower edge the air-port of the cylinder. The outer valve T (when the hammer strikes) approaches the lower edge of the inner valve, leaving but a slight opening, so that the instant the hammer begins to rise, the inner valve, connected with the sweep-shaft, begins to rise with it; the air is cut off; and, as the hammer rises, the air in the cylinder is compressed between the piston and the cylinder head, till the hammer falls. The air passes in at the slot, shown in the figure, at the side of valve P. The position of valve T (which is set by means of hand-lever W) determines the force of the blow. As the valve T is raised, the hammer rises further before the air is cut off by the valve P, which rises with it; and, of course, there is less air in the cylinder to be compressed. This can be carried so far as to prevent any blow at all; for the outer valve may be raised so high that the upper edge of the inner valve will cut off the supply of air as soon as the hammer begins to fall, thus tending to produce a vacuum; and the further the hammer falls the more complete the vacuum, so that the hammer is arrested before it reaches the anvil.

The inventor says: I do not claim the lifting apparatus described by itself; this has already been secured to me by letters patent, November 25, 1851.

But I *claim*, so controlling the admission and exit of air above the piston, that the force of the blow given by the hammer may be regulated by the condensation and attenuation of the air, as set forth.

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No. 13,608.—PETER L. WEIMER.—*Improvement in Trip-Hammers*.—Patented September 25, 1855. (Plates, p. 41.)

When the hammer A rises, the pawls F slide into the hub B. When the hammer falls, the pawls F catch into the teeth of ring D, and carry the ring around. If it is desired to diminish the force of the blow of the hammer, the hand-wheel E is to be turned so as to press the friction-brake S W against the circumference of the ring. By tightening the friction-brake sufficiently, the hammer can be gagged. C is the fulcrum of the hammer, the front end of which is not shown in the engraving.

*Claim.*—The arrangement of the hub, or centre piece B, the pawls

F, the interior ratchet ring D, the lined metallic strap S, the hand-wheel E, and the post P; the whole being combined, arranged, and operated, in the manner substantially as specified.

No. 12,443.—CHAS. MILLER.—*Improvements in Machines for Making Butt Hinges*.—Patented February 27, 1865. (Plates, p. 42.)

The claim, in combination with the engravings, sufficiently explains the nature of this invention. A more detailed description would occupy too much space.

F and F<sup>1</sup> represent the two strips of metal from which the hinges are cut; *x* represents the rod from which the pins are cut; the strips and hinges are represented in fig. 1 by dotted lines.

*Claim*.—First. The arrangement, as described, in the same line, of the punches *d* and *d*<sup>1</sup>, which cut out two blanks to the proper shape for a hinge, and the bending rollers *m m*<sup>1</sup>, which give the preparatory bend to the two blanks to form the joint, whereby two strips or bars of metal, fed at proper intervals of time towards each other, under the said punchers and through the said rollers, are cut into blanks, bent, and put together ready to receive the pin, as set forth.

Second. Connecting together the two cutters *h h*, which cut off the two blanks, and arranging and operating the said cutters so that they will cut off the blanks both at the same time, but not until they have both received the preparatory bend to form the joint, and been put together ready to receive the pin, substantially as set forth.

Third. So controlling the operations of the punches *d* and *d*<sup>1</sup>, which cut out the metal blanks; the rollers *m m*<sup>1</sup>, which give the preparatory bend to form the joints; and the cutters *h h*<sup>1</sup>, which cut off the partly formed hinge from the strips: that all act during each intermission of the feed movement, but that the cutters act more quickly or earlier than the punches, in order that the preparatory bending operation, which takes place after the action of the cutters, may be effected before the punches are entirely withdrawn from the metal, and that the punches may serve to hold the strips during the said bending operation, substantially as set forth.

Fourth. The arrangement in any way, substantially as described, of a slider V and an intermittently rotating-wheel W, for the purpose of removing the partly formed hinges from where they are put together and cut off, and carrying them and holding them to receive the pin, and have their joints finished, to wit: the said slider V working transversely to the direction in which the strips of metal move to be submitted to the successive operations of punching, bending, and cutting off, and the intermittently rotating-wheel W being placed on the opposite side of the strips to the said slider.

Fifth. The arrangement of the wire feeding and cutting apparatus, and the press which carries the closing die 38, in such a manner, that the horizontal intermittently rotating-wheel W, which receives the partly finished hinges when they are cut off, may bring and hold the hinges severally and successively, first, opposite the said feeding and

cutting apparatus, to receive the wire to form the pin, and afterwards opposite the closing die to have the joint closed.

This I *claim*, irrespective of the particular means of feeding and cutting off the air; as almost any kind of feeding and cutting apparatus may be used; and of the particular method of operating the closing die, which may be operated by any of the means commonly employed for such purposes.

Sixth. The eccentric curved piece 17, arranged substantially as shown in fig. 1, and described, for the purpose of finishing the insertion of the pin in the hinge by pushing into the joint so much of the pin as is left protruding when the pin is cut off; said pushing being effected by the carrying-wheel W carrying the protruding end of the pin in contact with the said curved piece.

Seventh. The general arrangement and combination of the several mechanical devices and appliances, substantially as shown, to form a machine for the manufacture of hinges from bars or strips of metal complete at one operation.

No. 12,853.—HENRY E. CANFIELD.—*Improvement in Double-Acting Spring Hinges*.—Patented May 15, 1855. (Plates, p. 43.)

The lower cylinder C (to which pin E is secured and prevented from turning by the pin G) being made fast in the door frame, the upper cylinder A, and with it the door, would be free to turn on pin E, were it not for the catches H H. By turning the door in either direction, it will bring one or the other of said catches in contact with one or the other of the hooked ends of the springs F, which spring will cause the door to return until the holder K relieves the catch of the strain from said spring, in which position the door is closed.

The inventor says: As I am aware that flat coiled springs, secured in hollow cylindrical chambers, have been before used in making double-acting spring hinges; therefore, I disclaim their invention.

But I do *claim* the attachment to one pin of two flat coiled springs, coiled in opposite directions, in combination with the holder K, or its equivalent.

No. 13,085.—ARASMUS FRENCH.—*Improvement in Springs for Hinges, &c.*—Patented June 19, 1855. (Plates, p. 43.)

When either or both plates *a* are turned, as represented in figure 2, so that each rod will be in a plane, radiating from the axis of the plates, all the rods will be bent to the greatest extent in the middle of their length, and then the spring will be at its fullest tension, and will, therefore, tend to turn the two plates in opposite directions. Figure 3 represents the spring when applied to a hinge.

The inventor says: I do not limit myself to the form or application specified, so long as the same mode of operation is attained by the substitution of mere equivalents.

But I *claim* the method, substantially as specified, of composing a spring of a series of elastic rods connected at each end to plates, or their equivalents, and at, or nearly at, equal distances from the centre of

the plates, and surrounded at, or nearly at, the middle of their length by a collar or ring, so that they shall be held nearer together at the middle than at the ends, substantially as specified.

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No. 13,321.—JOSEPH PLEGAR.—*Improvement in Hinges*.—Patented July 24, 1855. (Plates, p. 43.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—Making a bolt on the pin part of the hinge, and a cup or socket on the upper section of the hinge to receive the bolt, as set forth.

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No. 13,355.—SOLON S. JACKMAN.—*Improvement in Machines for Compressing Puddlers' Balls, and other Masses of Iron*.—Patented July 31, 1855. (Plates, p. 43.)

The two fluted cylinders B C are of the same size, but the cog-wheels D and E (one on the shaft of B and the other on the shaft of C) are of unequal size, so that the circumferential velocity of B will be different from that of C. The wheels D E do not gear into each other, but both gear into an intermediate pinion (not shown in the engraving). The ball is thrown into the space between B and C and *a a*; and, by the unequal velocity of both, it is gradually carried down and compressed between the two cylinders, until, passing the line of the centres of B and C, it becomes disengaged.

*Claim*.—The compressing of puddlers' balls, or similar substances, by means of circular compressors B and C, so arranged that their peripheries shall have different degrees of speed, and their surfaces, in contact with the mass to be operated on, shall cause its rotation on its own axis, and by compression between them reduce the metal into a bloom, in the manner substantially described.

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No. 12,227.—LYMAN C. CAMP, assignor to PHELPS, DODGE, & Co.—*Improvement in Machines for Forming Kettles from Metal Dishes*.—Patented January 9, 1855. (Plates, p. 43.)

The mandrel carriage E is adjusted (by turning it around on pivot *a*) to bring the clamp-mandrels H H<sup>1</sup> to such a position as to form the proper angle with the roller shafts M N, and thus secured; and the rollers are adjusted at a proper distance apart by the screws *l*, which act upon the movable bearings *m* of the roller O<sup>1</sup>. The roller carriage L is then moved towards the mandrels, till the rollers O O<sup>1</sup> arrive close to the clamps I P<sup>1</sup>. The disc Z (represented in a strong dotted line) is then inserted between the clamps and entered between the rollers. (See fig. 2). When the disc is secured, motion is imparted to the machine, and the action of the screw Q will draw the roller carriage from the mandrels. The effect of the movement of the rollers in the line of their axis, is to draw that portion of the disc, which is left outside the clamps, to form the sides of the vessel in a direction



parallel with the said movement; and this drawing, being kept up continuously all round, gives the aforesaid portion of the disc the form of a frustrum of a cone. The combined effect of the rotary and rectilinear movements of the rollers is such as to draw out the metal towards the edges of the disc a sufficient degree to produce the circumferential contraction, without which the conical form could not be produced; and the continuous rolling action upon the metal keeps the particles so compressed together that its texture is not injured.

*Claim.*—The employment of a pair of rollers  $O O^1$ , in combination with a pair of clamps  $I I^1$ , or its equivalent, all arranged, adjusted, and operating substantially in the manner described, for the purpose of operating upon a disc of brass, or other metal, to roll out the said disc from a certain distance all round its centre to its edges, and bend or draw the part so rolled to form an angle with the central part, and cause it to be distended radially or towards the edges, and to be contracted circumferentially, thereby forming the said disc by successive stages into a kettle or vessel, or other similar article, with conical or cylindrical sides, without employing a mould or form, as herein fully set forth.

No. 12,186.—THOS. SLAUGHT.—*Improvement in Pad-Locks*.—Patented January 2, 1855. (Plates, p. 43.)

When the lock (fig 1) is to be unlocked, the bits of the key  $m$  first act upon the tumblers  $E$ , and bring the slots  $l$  (of which each tumbler has one at varying distances from the edges of the tumblers) in line and in range with the stud  $j$  on the guard-bar  $D$ . A bit on the key then acts against the lower end of the guard-bar  $D$ , which is thereby turned, and the stud  $j$  passes into the slots  $l$  in the tumblers, and the upper end of the guard-bar is thrown above the upper end of dog  $C$ ; and this upper end of dog  $C$  is then thrown back by the action of spring  $i$  into recess  $h$ , and the shackle  $B$  is free and can be withdrawn. (See fig. 2.)

The inventor says: I do not claim the tumblers  $E$ , nor the guard-bar; for they have been previously used.

But I do *claim*, 1st. The employment or use of a dog  $C$ , constructed as herein shown, or in an equivalent way, so that the pressure of the shackle upon it, when the end of said shackle is forced into the case, will throw the dog into the recess or notch in the shackle, without the intervention or aid of a spring or any other device.

2d. The combination of the dog  $C$ , guard-bar  $D$ , with the stud  $j$  upon it, and slotted tumblers  $E$ , arranged as herein shown, and operating in the manner as set forth.

No. 12,240.—JOHN C. KLINE.—*Improvement in Door Latch Locks*.—Patented January 16, 1855. (Plates, p. 43.)

By turning the knob (which is fastened on the square pivot  $G$ ) right or left, the bolt  $B$  is drawn back by the action of the arm  $l$  or  $l^1$ , and spring  $E$  forces the bolt back again when the knob is let loose. Fig. 1 shows the bolt disengaged from the key tumbler, in which case the bolt

can be freely worked by the knob. But by turning the bolt-key  $n$  the tumbler is brought into position fig. 2, in which nose  $g$  sets against the shoulder  $d$  of the bolt, and the part  $o$  of the tumbler rests against the side of the bolt, and the spring receiver D (being pushed back by the oblique faces between  $g^1$  and D) rests against the nose  $g^1$  of the key-tumbler. In this position the bolt is prevented from being moved by the knob. Fig. 2 also shows how the night key  $q$  sets in the notch  $c$ , whereby the bolt is stopped. The shape of the key-tumbler is such that a key inserted in either of the keyholes will operate it.

*Claim.*—The arrangement in double keyholed right and left hand locks of the key-tumbler  $c$ , with its noses or projections  $g g$  in relation to the spring receiver D and the shoulders  $d d$  of the bolt, as set forth.

No. 12,403.—FREDERICK DENZLER.—*Improvement in Bank Locks.*—Patented February 20, 1855. (Plates, p. 44.)

If the bolt B is pushed out (fig. 1) through the fallar C, the projection Y at the back of the bolt has moved lever M in such a manner that through the same the catch X, which is connected to said lever M, is pushed against the tumbler-plate, so that its tooth falls into one of the teeth of the tumbler-plate, locking thereby the same to the tumbler N, and the projection  $P^1$  of the tumbler-plate P has come out from between the projections I I of the bolt B. If the fallar J is now turned again so as to allow the slide D to be pressed down by its spring lever K, carrying with it the tumblers N with the tumbler-plates P locked to the same by the catch X, the projection  $D^1$  of the slide D comes against the projection  $B^1$  of the bolt B, and the dog E is moved into the notch  $g^1$  of the bolt B, keeping thereby said bolt B fast. The dog H has thereby been likewise moved under the lever F, preventing said lever from being pushed away by the projection  $i$  on the fallar C, and prevents, consequently, said fallar from being moved. (See fig. 2.)

The lever F turns upon a centre  $f$  and is provided with a roller  $h$  bearing against projection  $i$  on fallar C.

*Claim.*—The lever F in connexion with its spring lever G, together with the dog H acting upon the lever F, said dog H being actuated by the dog E, for the purpose of preventing the fallar C from being turned.

No. 12,476.—WILLIAM BALLAUF and FREDERICK WURTH.—*Improvements in Guards for Door Locks.*—Patented March 6, 1855. (Plates, p. 44.)

The object of this invention is to provide a conveniently portable instrument, by means of which the keyhole of any ordinary door lock can be rendered inaccessible, the instrument being removable by the same key which fastens it. The spindle (together with its socket, etc.) is to be screwed within the eye of the keyhole of any usual size, the groove 1 serving to facilitate the engagement of the screw within the keyhole. Except when the key  $l$  is brought into action, the springs  $e$  retain the dent 5 (on each tumbler) within the notch 4 in the key.

The front end of each tumbler is confined to a longitudinal motion by the pin *g*. The T-shaped slot 7, working on pin *h*, permits the rear ends of the tumblers to be elevated by the piston *i* to the proper distance, by means of channel 12 on the key-stem. The horizontal portion of the slot then permits the tumblers to be advanced longitudinally by the pressure of end 8 and groove edge 9 of the key, respectively, against the spurs 3 3<sup>1</sup>. This action brings the lugs 5 clear of the notches 4 4<sup>1</sup>, and into the eccentric channel 10 around the spindle shank. The lugs 5 and spurs 3 3<sup>1</sup> then occupy the channels 10 9 and 11, the latter formed by the opposing and parallel shoulders of the key and spindle. If a key is employed which pushes the tumblers either too far or not far enough, it is impossible to rotate the spindle. The form and action of the T slot is such as to restrain the tumblers from any longitudinal movement, unless at the commencement of the advancing pressure.

The action of the eccentric channels of the spindle and key is to impart to the tumblers a short sliding motion to and fro in the act of rotating the spindle; and all the channels being parallel to each other, the dent and spur on each tumbler have an unrestricted motion in their respective channels. However, should a key be employed whose channels were either more or less eccentric, it would be impossible to rotate the spindle.

The crotch 13 on the key engages (on the advancement of the key) a spur 14 upon the spindle shank, and thus the spindle may be rotated by the key.

We claim, 1st. The bit or case C and the bracket K, adapted to the slot of an ordinary keyhole, in combination with the cylindrical socket *b* and tapering screw-threaded spindle *a*, substantially as set forth, adapted to the eye of the keyhole; and which spindle, by means of a suitable key *l*, as described, can be screwed within or unscrewed from the keyhole, the rotation of the screw by any other than the proper key being prevented by the described tumblers *d*, or their equivalents.

2d. The sliding or vibrating tumblers *d*, provided with a locking dent or lug 5 catching within a notch 4 in the spindle shank, and disengaged therefrom by the combined agencies of the channelled and sliding key *l*, elevating pin or piston *i*, longitudinal and T slots 6 7, and stationary pins *g h*, substantially as described, the tumbler, on the withdrawal of the key, relocking by means of a suitable spring.

3d. In combination with the tumblers, substantially as represented, the longitudinal notches 4 4<sup>1</sup>, extending on both sides of a transverse or eccentric channel 10, around the spindle shank.

4th. The eccentric and parallel channels 9 10 11, around the spindle-shank and key-stem, acting simultaneously upon both dent and spur of each tumbler, after the manner and for the purposes set forth.

5th. The tapering screw, threaded, and spirally scored spindle in this connexion.

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No. 12,526. —WILLIAM WARWICK.—*Improvement in Door Locks*.—Patented March 13, 1855. (Plates, p. 44.)

*The key when inserted and acting with its bevelled wards *w* against*

the bevelled edges  $e$  of the tumbler, will push it back, (see fig. 3,) so as to allow it to pass over stud  $z$ .

*Claim.*—So forming the tumbler with bevelled edges for the key to operate it, and so arranging it in relation to the bolt and the stud  $z$ , that when locked the bolt is held firm against pressure by the tumbler fitting over the stud  $z$ , as set forth.

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No. 12,647.—C. GUSTAV MUELLER.—*Improvement in Bank Locks.*—Patented April 3, 1855. (Plates, p. 45.)

The bars  $M$  are lifted by the key acting on the lifting pins  $n$ . The key has a bit for each pin  $n$ , and these bits are capable of being extended so as to suit the depth of each hole in plate  $I$ . The key moves the horizontal sliding pins  $f^1$   $I$   $g^1$ , and by moving plate  $S$  to the back of the lock, (see fig. 2,) the ends  $g^1$  will be pushed into the holes in plate  $I$ , and the bars  $M$  will be free to be moved back by the action of springs  $s$ . If knob  $B$  is pressed in, the rod  $p$  presses against arm  $l$ , which partially turns shaft  $t$ , and causes lever  $d$  to press plate  $r$  down into the rack-teeth in  $M$ . When this has been done, (and it must be done before the knob  $H$  can be turned, in order to throw back the bolt,) the bars  $M$  and  $i$  (which latter serve to keep the apertures constantly closed through which the pins  $n$  play) are rendered immovable, and cannot therefore be made to produce any friction on the inner side of the lock as long as they are thus held by the plate  $r$ ; and as the horizontal slides  $f^1$ , which have to be forced into the holes in bars  $M$ , are a short distance from the surface of the bars  $M$ , before knob  $H$  is turned, it follows that these slides cannot be pushed against the bars  $M$  before they have been fastened by plate  $r$ , thus obviating any friction between the bars and slides, and thereby preventing the possibility of picking the locks.

A more detailed description would occupy too much space.

*Claim.*—First, a key provided with extension bits, the individual length of each of which can be altered at pleasure, and still be applicable to the lock as described.

I also claim the arrangement of the plates  $M$  and slides  $f$ , for preventing any friction, and so as to prevent the possibility of feeling how the plates or slides are connected, as set forth.

I also claim the bars  $M$ , having saw-toothed racks, as arranged with the sliding bars  $i$  and the projecting pins  $m$ , for operating them from the outside of the lock, as described.

I also claim the arrangement of the horizontal changeable sliding pins, which are moved by the bars  $M$ , the rack-toothed wheels or segments, and the forked lever  $U$ , which is moved by the projection on the circular plate  $W$ , as set forth.

I also claim as arranged, the bars  $M$ , and the stationary plate  $H$  for holding the pins when they are withdrawn from said bars, as described.

I also claim the arrangement of the knob, the collar  $R$ , with its bent arm  $T$ , and the circular plate  $W$ , for turning and holding said plate, substantially as described.

I also claim, as arranged, the rod *p* of the inner knob B, the lever *l*, shaft *t*, lever *d*, plate *r*, and its spring *g* for connecting said knob with the bars M, and operating them, as set forth.

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No. 12,784.—JOHN SCHNEIDER.—*Alarm Attachments for Door Locks*.—Patented May 1, 1855. (Plate, p. 45.)

The hammer C has near its inner end a semi-circular plate *b*, and turns on a pivot *c*; the end *d* of the hammer rests against a spring D. A tumbler E has a projection *h* fitting in the keyhole G, and also a pin *f* passing through the other side of the casing A. A spring *g* serves to press the tumbler towards the keyhole. In this position of the tumbler its tooth *e* fits into a corresponding notch in the plate *b*.

A burglar, in tampering with the lock, would move the projection *h*; consequently the tumbler and tooth and the hammer would fall, and explode the charge of powder in barrel B. The knob F on pin *f* may have a string attached to it, which may also be attached to the casing of the door, so that the opening of the door would draw out the pin, and with it the tumbler, and cause the hammer to fall.

*Claim*.—The employment or use of the barrel B, hammer C, with plate *b* attached, spring D, and tumbler E, when arranged as herein shown and for the purpose as set forth.

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No. 12,932.—LINUS YALE.—*Improvement in Bank Locks*.—Patented May 22, 1855. (Plates, p. 45.)

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I do not claim separately the rods *e e'* working in holes in the bolt B, and a sliding frame C; for that is an extremely old fastening, and used in locks many years since.

But I do *claim* the sliding frame C and plate D, in combination with the rods *e e'*, when constructed and arranged as herein shown, so that the plate D will, during the operation of unlocking the lock, cover the opening or keyhole E<sup>1</sup> in the casing before the bolt can be thrown back, thereby preventing the lock from being picked, or impressions taken to form a key.

Also, unlocking the lock by means of a segment key F, which is placed within a corresponding shaped recess *g* in the plate D, by passing said key through the opening or keyhole E<sup>1</sup>, and moved with said plate; so that when the bolt B is thrown back the recess *g* and key F will be in line with or opposite to the opening *k* in the knob E, thereby allowing the key to pass out of the recess *g* through said opening *k*, into the hand, as herein shown and described.

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No. 12,957.—WM. MAURER.—*Improvement in Door Locks*.—Patented May 29, 1855. (Plates, p. 46.)

When the lock is in a locked state (see fig. 1) the pawl D projects *within the slot d* in the casing A, and prevents the band B from

turning on the casing A, and consequently the bolt-pin from being withdrawn or thrown back. To unlock the lock, therefore, the pawl D must be thrown out of the slot *d*. In order to effect this, the key is placed in the keyhole and turned, and the several bits of the key act against their proper notches in the inner edges of the plates G, and the plates G are turned, and also the segment tumblers J, in consequence of the pins *j* acting against them, and the slots *i* are brought in line, and the spring-plate *c* forces the pawl D into the slots *i*, and freed from the slot in the band B, the bolt (which is attached to the projection C on band B, and is not shown in the figures) can then be thrown back as the band is allowed to turn on the casing A. To lock the lock, the bolt is thrown forward by the usual knob, and the key is inserted in the keyhole just far enough to turn the plate K. This plate is turned from left to right, and the shoulder *k* turns the segment bar L, both bars L being moved in consequence of their connexion, and the inclined recesses *l* throw the pawl D back into the slot in the band B. The bar *m*, which connects the two segment bars, throws the segment tumblers back to their original positions, and the spring catch H keeps the plates G in proper position when the key is withdrawn from the lock.

*Claim.*—The arrangement of the notched annular plates G, segment tumblers J, spring pawl D and band B on the casing A of the lock, and segment bars L L, as shown for the purpose of connecting and disconnecting the band B from the casing A, and allowing the bolt of the lock to be operated and secured as described.

No. 13,037.—JOHN C. KLINE.—*Improvement in Door Locks.*—Patented June 12, 1855. (Plates, p. 46.)

By turning the key *n*, tumbler C turns on its pin *h*, whereby nose *g*<sup>1</sup> operates on the oblique face *t*<sup>1</sup> of the bolt B, and forces the same forward, until the tumbler has acquired the position shown in fig. 2, when the nose *g*<sup>1</sup> sets into notch *d*, whereby the bolt is kept in a locked state. The bolt, when moving, is guided by the arm *k*. During the operating of the nose *g*<sup>1</sup> on the face *t*<sup>1</sup>, the other nose *g* of the tumbler is allowed to pass freely in a slot *s* cut out of the bolt. If the key is applied from the other keyhole *a*, then the nose *g* operates on the surface *t* of the tumbler, moves the bolt forward, and sets finally into notch *d*; in the meantime the nose *g*<sup>1</sup> is allowed to pass freely in slot *s*<sup>1</sup>. Thus the noses operate on the lock-bolt by means of the inclined surfaces *t t*<sup>1</sup>, and stop the same by means of its setting into the notch *d*.

*Claim.*—The inclined or oblique faces *t t*<sup>1</sup> and notch *d* of the bolt, in connexion with and operated by said key-tumbler, substantially as described.

No. 13,050.—JOS. C. SILVY.—*Improvement in Door Locks.*—Patented June 12, 1855. (Plates, p. 46.)

*a a* is the circular bolt referred to in the first part of the claim. The key *k* is provided with a screw in the handle, which regulates the

tumblers of the key, and has a scale which serves (after locking) to change the tumblers of the key by means of the screw, so that the key will have no effect on the lock until the key is placed back at same scale it was when locked.

*Claim.*—The circular or solid circular bolts, one half in the lock, and the other half in the catch, as specified.

2d. The extension key, to lengthen or close the tumblers by means of a screw or slide, together with a scale to regulate the sliding-bolt or bolts in the lock.

No. 13,163.—EDMUND FIELD.—*Improvement in Locking Latches for Doors.*—Patented July 3, 1855. (Plates, p. 46.)

When the door is closed, the inclined edge at the outer end of the catch strikes against the lower edge of the slot in the bar G, and the catch passes through the slot and is forced down over the lower edge of said slot by the spring D, which acts both upon the bolt and catch. The key is then inserted in the keyhole and turned, and the guard tumbler C is first raised, so that the projection *c* will be raised from pin *d*, attached to the bolt. The key then throws the outer end of the bolt through the slot in bar G, and the catch is thereby prevented from being raised until the bar is thrown back.

The inventor says: I claim nothing new in the locking bolt or catch, separately considered, nor yet in merely combining them so that the locking-bolt is arranged to shoot into and lock the catch.

But I *claim* the arrangement, as substantially shown and described, of the locking-bolt B with F, when these parts are hung and operate together, essentially as set forth, and so that the locking-bolt with its tumbler-guards and other appurtenance or appurtenances, when not used to lock the door, are set in motion by the catch each time it is operated, substantially as and for the purposes set forth.

No. 13,722.—RICHARD G. HOLMES and WM. H. BUTLER.—*Improvement in Locks.*—Patented October 30, 1855. (Plates, p. 46.)

In order to unlock the lock at the outer side of the door, the inner end of lever C is operated by pressing the sliding plate J against it; and in order to do this, the sector tumblers K must all be turned upon their axis *k* till the slots *l* in the several tumblers are brought in line with each other, and directly opposite the plate K<sup>1</sup>, so that the tumblers and plate may be shoved inwards, the plate fitting in the slots. This is done by a key N having bits of proper lengths.

The spring L, when the plate J and the tumblers are shoved inwards, will be pressed against the side of the tumbler adjoining it, and will cause the several tumblers to be pressed together and bear against each other, so that one cannot be moved on its axis *k* separately. By this means a burglar is prevented from operating single tumblers.

The dotted lines in fig. 1 represent the position of bolt B after the door has been opened.

*Claim.*—First. Arranging the spindle or arbor E in such a relation

with the bolt, that the bolt may be operated by drawing and pressing the spindle or arbor in a direction transversely with the casing of the lock, substantially as described.

Second. The cylindrical bolt B constructed and arranged substantially as shown; and also, connecting said bolt to the spindle or arbor E by means of the lever C, as described.

Third. The employment or use of the sector tumblers K when attached to a sliding plate J, and used in connexion with a spring L, which is acted upon by the bended or inclined projection *n* at the side of the bar or casing I, for the purpose of preventing the lock from being picked by obtaining a knowledge of the position of the slots *l* in the tumblers by pressing the tumblers singly against the plate K<sup>1</sup>, as described.

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No. 13,753.—D. W. G. HUMPHREY.—*Improvement in Locks*.—Patented November 6, 1855. (Plates, p. 47.)

This lock will indicate the number of times it has been opened after having been set; and if operated upon with a false key, it will entrap the key and sound an alarm.

The indicator A turns on a pivot *i*, and is moved forward one number at each unlocking or opening by the sliding of bolt C, which drives forward the lever D, which turns on pivot X, and operates the indicator at the point *n*. The bolt C is connected with lever D at the point *z*, by means of pin through lever, which rests in slot in bolt at said point of connexion *z*. The indicator A is held forward as driven by lever D, by means of catch F, which turns on pivot *k*, and is forced against indicator by coil spring around pivot *k*. In the locking, the lever D is forced back with the bolt C bending in joint of lever at the point D to pass under teeth of indicator, and then is straightened back by spring *u*. The indicator is driven around until the long space between the teeth rests at the point *n*, when the bolt C can slide back and forth any number of times without effecting any further change in the position of the indicator until it is regulated. H is a stump against which the long tooth *r* of indicator rests when it (the indicator) is regulated. The slide G is connected with the lever T (fig. 1) at the point *d*, which lever, being raised at the point *y* and turning on screw at point *c*, depresses the slide G, (fig. 2,) which slide depresses arm of catch F, forcing the catch back clear from teeth of indicator, and the indicator is forced back to its starting point by means of coil spring within it at R, when the long tooth *r* rests upon the stump H. The indicators, for any number of boxes in one body, are connected by their levers T (fig. 1) at the points *y* vertically by rods or wires, and horizontally by having these rods or wires connected to a shaft, which, being turned to depress the levers at point *y*, and then turned back to raise the levers to their resting place, all are regulated in a moment's time.

N (fig. 2) is a pivot on which the key turns to slide the bolt C. The catch M is raised from notch of the bolt C by slide L under said catch by turning the key. B is a circular movable ward-plate which may turn on pivot N, its centre, when the key is not fitted to the construction of the wards *g*, which are placed on either side of the entrance of



the key. The ward-plate is prevented from turning too easily by the lever E, one end of which rests in the rounding notch of plate at S, and is pressed into the notch by the coil spring around pivot at the point V on which the lever turns. The other end of lever E protrudes through the aperture at *a* (fig. 1) on inside of door. The key enters between the wards *g*; and if it is not fitted to the wards, the ward-plate easily turns, and the end of lever E catches into the notches *t* on the under side of plate and prevent its being turned back; consequently, the key cannot be turned back or withdrawn until the ward-plate B is released by raising the end of lever at *a*, on inside of door (fig. 1). When the ward-plate is turned by any key not fitted to the wards, the projections on either side of the plate turn into the notches in the bolt C at the points P, thus barring the bolt against being moved until the plate is released, as before described.

The end of the lever E (fig. 2) at the aperture *a*, (fig. 1,) when the door of box is closed, shuts into a notch connected to a vertical wire running through tier of boxes at the point J. This wire is connected to an alarm, and is operated, when a key is entrapped in the lock, by the vibration of the end of lever E at the point *a* resting in the notch of wire at J.

*Claim.*—The indicator A, movable ward-plate B, and lever E, arranged and operating in the manner set forth.

No. 13,814.—J. HENRY A. BLECKMANN.—*Improvement in Locks.*—Patented November 20, 1855. (Plates, p. 47.)

The tumblers are pivoted at L; the key is introduced at I; the bits *s* and T, which are secured to the square portion *q* of the key by means of a nut V at the end of said portion, act, the former upon the faces *l* of the tumblers, and the latter (T) upon the edges *x* or *y* of the bolt B. It will be seen that the bits *s* can be attached to the key in any desired order; they are of such lengths that when brought to bear upon the tumblers at *l*, the latter shall be elevated so as to bring one or other of the channels *r* opposite to the pin *p*. When in this position the bit T, striking against the bolt at *y*, shoots it forward, the pin *p* passing into one or other of the notches *m*, according as the tumblers are more or less raised by their bits. As the key passes round, the tumblers fall upon the pin, and the bolt cannot be again returned until each tumbler is raised a sufficient distance to permit the pin to return through the channels *r*; this can only be effected by the use of the same combination of bits as was employed to shoot the bolt.

*Claim.*—The mode of constructing and arranging one or a number of tumblers, as described, which may be locked and opened with changeable key-bits, as set forth.

No. 13,880.—EDWARD KERSHAW.—*Improvement in Locks.*—Patented December 4, 1855. (Plates, p. 47.)

B is the bolt, in the form of a disc, working within a recess formed in the lock case A; a portion of the disc is removed, to coincide with

the straight edge of the lock-case when unlocked. The semi-circular tumblers *C C* are placed upon each side of the flat part or plate *b*; and the tumblers, together with the plate *b*, form a cylindrical figure, which fills the cylindrical cavity in the lock-case. The bits *e e* of the key *E* closely embrace the plate *b*, thus engaging the disc. Upon the tumblers *C* are small stumps *c*, each of which works in a corresponding slot *a* in the cylindrical part of the lock-case. These slots run in a direction parallel to the axis, to permit a corresponding motion of the tumblers as they are thrown back and forth by the key *E* and springs *D*. In any desired part of slot *a* another slot *a*<sup>1</sup> is cut, at a right angle to the first, which forms a throat, into which the projection *c* of the tumbler passes when the disc *B* is rotated to unlock. These throats are cut in a position to correspond to the length of the bits of the key.

Figure 3 represents a vertical section; and figure 4, a top view.

Figure 1 represents the bolt when locked.

The inventor says: I am aware that locks have been heretofore made with the bolt in the form of a disc, and rotating about a centre; and also that tumblers have been used in connexion with such lock-bolt, which had a movement with the bolt, and parallel to its axis, and were placed in position by pushing in the key; therefore, I do not claim either of these.

But, in connexion with a rotating lock-bolt, or its equivalent, I *claim* the combination of the shank *b* and segmental tumblers *c c* with the tubular recess of the lock-case enclosing the same, with their several subordinate appendages, co-operating with each other substantially as described.

No. 13,884.—J. H. POMEROY.—*Improvement in Locks*.—Patented December 4, 1855. (Plates, p. 47.)

The additional bolt *M*, which is pressed forward by a spiral-spring *N*, holds the fastening bolt *G* of the lock within the case, or in the position in which they are placed to unfasten the door, while the door is open. When the door is closed, the end of the bolt *M* is forced in by the frame of the door, so as to release the bolt *G*, which is forced out by the spring *K*, so as to fasten the door. But whenever the bolt *G* is drawn back, and the door opened sufficient to allow the bolt *M* to project through the front plate, it is forced out so as to hold the bolt *G* in the case, until the door is closed again.

I *claim*, on spring locks or latches, the use of the spring-bolt or catch *M N*, or its equivalent, so constructed as to be operated by the door-frame or keeper to release the bolt and fasten the door in the manner substantially as set forth.

No. 13,911.—HENRY C. JONES.—*Improvement in Locks for Freight Cars*.—Patented December 11, 1855. (Plates, p. 47.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—Combining with the double jaw spring bolts of a lock, and

with the levers by which the jaws are opened by the action of the key, as specified, a stop-tumbler, substantially such as described, operated by the key, after the jaw bolts have been opened, to hold and keep them apart after the key is taken out of the lock, that the lock may be employed as a stop or dead bolt lock, as specified.

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No. 13,968.—THOMAS BOWLES, assignor to ROBERT M. PATRICK.—*Improvement in Locks*.—Patented December 18, 1855. (Plates, p. 47.)

Figure 1 represents the parts when locked.

Figure 3, when unlocked.

To unlock, the operation is as follows: The key being inserted, each of the key-bits strikes upon the end  $x$  of the link  $c$  and  $d$ , except the one marked  $y$ , which does not at first come into play. The key, thrust in, pushes back those links more or less according to the form of the same, and so as to bring the several cuts  $a^1 b^1$  into line. The point  $y$  will then have gone under the fork  $m^1$  of the lever. At this moment the cuts  $a^1 b^1$  will be in line to receive the dogs  $f g$ , which are driven in by the force of their springs. This moves back the piece  $i$ , there being a slot in  $k$  to allow the guide-pin to play without moving the latter. The other projection  $l$  also rises, thus relieving the tail of the lever, which, however, does not now follow, as its other end  $m^1$  is supported by the key under it. The bolt can now be pushed back; for this purpose the key is withdrawn so far as is necessary to remove  $y$  from under the fork  $m^1$ , when that end immediately drops as far as permitted by the rise of the tail, which is arrested by the projection  $l$ . Thrusting the key in, the point  $y$  now strikes the end  $m^1$ , and pushes it along, and, being attached to the link  $k$ , the bolt  $n$  is withdrawn. The movement of  $m$  carries the other point of the fork  $m^2$  away from the supporting pin  $p$  of the shutter, which now drops towards the key-hole, but is arrested by striking the key, the lower edge resting upon it, as shown at  $o$ . On pulling the key out, the shutter falls to  $t$ , and closes the hole, the pin  $p$  dropping against  $m^2$ , ready for action in the next movement for locking.

The position  $t$  of the shutter is represented in fig. 3, in broken lines.

*Claim*.—The shutter  $o$ , so arranged that, being brought into action when the bolt is withdrawn, it shall cover the key-hole while the bolt is so withdrawn, as set forth.

Also, the arrangement for withdrawing the bolt by a distinct movement of the key, after the tumblers have been set, such arrangement consisting of the lever  $m$  in combination with the link  $k$  and the bolt  $n$ , as described.

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No. 12,708.—J. M. STONE, assignor to the MANCHESTER LOCOMOTIVE WORKS.—*Improvement in Lathes for Turning Locomotive Drivers*.—Patented April 10, 1855. (Plates, p. 48.)

The object of this arrangement is to dispense with laying out the points by hand where the holes for the wrist-pins are to be bored. These holes are required to be exactly equi-distant from the centre of

the wheel, and to form in relation to this centre an exact angle of  $90^{\circ}$ . The face-plate, upon which the wheel is turned off, is mortised, and drill D passed through. Another drill  $D^1$ , for the purpose of boring one of the wheels, is mortised through the foot-stock to bore the opposite wheel. The axes of these drills are parallel to the axis of the lathe, the one vertically beneath it, and the other in a horizontal plane passing through it. The drills are made adjustable, so as to accommodate them to different lengths of stroke. Thus the two wheels may be bored with the required exactness without laying out the points by hand, and without removing the wheels from the centres upon which they have been turned,

*Claim.*—The drill D  $D^1$ , in combination with the turning lathe, the one being mortised through the face-plate, the other through the foot-stock, in the manner and for the purpose substantially as herein set forth.

No. 12,117.—NORMAN AYLSWORTH.—*Improvement in Machines for Boring, Planing, and Slotting Metals.*—Patented January 2, 1855. (Plates, p. 48.)

Cross-head K K can be moved up or down and fastened by screws X on two columns D. Hand-wheel and screw N serve to move the carrier L of the turning tool along the cross-head K K; and hand-wheel and screw O raise or lower said tool carrier. A feather or mandrel Q and a groove within hub F allow said mandrel to be worked up and down by means of nut S and worm-gear T U. V is the rimmer, firmly fixed to the tool-stock R R, which itself is firmly fixed in the centre of mandrel Q. Pinion Z on driving-shaft Y revolves table I; pinion b serves to work nut S, and thereby to raise or lower mandrel Q in case the worm-gear T U is thrown out of gear. The operation is as follows: The wheel to be bored, etc., is fastened on table I; the tool-stock is passed down through the hub of the wheel, so that the lower end of the tool-stock enters the upper end of the spindle H. The table being then revolved, and the worm-gear being operated upon, mandrel Q moves down, and with it stock R and cutter V, thereby boring the wheel. By means of hand-wheel O the tool P is moved down, turning off the hub of the wheel; hand-wheel N at the same time imparting the proper horizontal motion to P.

In order to cut a key-seat, or slot, the motion of the table I is stopped, the worm is thrown out of gear, a tool-stock, with a proper cutter, inserted into the mandrel in place of tool-stock R; pinion b is then properly revolved, thereby revolving nut S, and removing the tool-stock up or down, by which operation the key-seat is cut through the hub of the wheel.

*Claim.*—The so arranging of the several parts of a machine for turning, boring, and cutting key-seats in car-wheels, cranks, and other machinery, as that the three several operations may be completed from the same centres, without unchucking said piece of machinery, by which means more perfect work can be done than when the piece is removed or rechucked for two or more successive operations, the whole being achieved in the manner set forth.

No. 12,228.—WM. BEASLEY, assignor to JAS. BRETT, JNO. WATKINS BRETT, CHAS. WM. TUPPER, and WM. BEASLEY.—*Improvement in Manufacturing Metal Tubes*.—Patented January 9, 1855. (Plates, p. 48.)

*f* represents in the engravings the strip coiled around mandrel *d*, which is welded to a tube by passing it through the rollers *h i i*.

The inventor says: I do not claim subjecting metal tubes to cross-rolling, as that has been done before.

But I do *claim* the forming of a metallic tube, by winding a strip of metal spirally on a mandrel, and welding it by cross-rolling, substantially as described.

No. 12,268.—SOLOMON G. BOOTH.—*Improvement in Rollers for Corrugating Sheet Metal*.—Patented January 23, 1855. (Plates, p. 48.)

The rollers consist of single plates *c c<sup>1</sup> c<sup>2</sup>*, &c. The width of the rollers, and consequently the curvature of their faces, may be changed by the insertion of additional plates, or the removal of some of those already on the roller-shafts.

The inventor says: I do not claim making the rollers of adjustable sections, for the purpose of repeating bending operations upon a piece of sheet metal; nor do I claim making rollers of two or more parts.

But I *claim* making the swages and dies for forming beams of wrought iron of numerous thin sections, so that one, two, or more sections can be removed to produce beams of different forms, for the purpose of saving the expense and inconvenience of a multiplicity of pairs of swages and dies, all substantially as set forth.

No. 12,503.—ALANSON BROWN.—*Improvements in Machines for Turning Boring, and Slotting Metals*.—Patented March 13, 1855. (Plates p. 49.)

The hub C (which supports the lower spindle D on which the table or face-plate E is fixed) is not centrally placed between the three columns G G G, and a short column I is used at the front part of the machine, for the purpose of affording an unobstructed front for the introduction of large pieces to be operated upon on the table. By clutching or unclutching the clutch U, the driving-shaft *o* will either revolve the gear-wheel V and the table, or it will remain stationary. By shifting the driving-belt T from the position represented in the engraving to the loose pulley J<sup>1</sup>, the tool-bearer or upper spindle R<sup>1</sup> will remain stationary, otherwise it will be revolved. The bevel-wheel is feathered on spindle R<sup>1</sup>, so that the spindle may freely rise and fall without interrupting its rotating motion. Motion can also be given to bevel gear U<sup>1</sup> on sleeve V<sup>1</sup>, which passes through hub G<sup>1</sup>, and may turn therein, so that the spindle, which may carry a boring tool on its lower end, may be boring out the hub of a car wheel, crank, or other piece, whilst the sleeve outside of it, but also rotating, may be carrying a turning tool and be facing off said piece at the same time. The cross-head *b* can

be slid up and down on the side columns G, (by means of shaft *m* and gearing *o p*.) and supports a sliding tools-tock holder *c*, which can be made to move horizontally and approach the centre, either by means of hand-wheel *l* or pulleys *h*, driving shaft *g*, gearing *i j*, and horizontal screw shaft *k*, working in a female screw in sliding piece *c*; *e* is the tool carried by the said sliding piece *c*, and is used for facing off work when the table is rotated.

The inventor says: I am aware that single column machines for boring and drilling small work have been used, in which operative parts project forward of said column; this I do not claim, as the support is not firm enough for accurate work of the kind which my machine is desired for.

But I *claim* so arranging the table on face-plate and upper spindle or tool-holder on a machine for turning, boring, and cutting key-seats, as that either one of the two may be revolved and the other remain stationary, as the character of the work may require, and substantially in the manner set forth.

I also claim combining with the upper spindle a revolving slide-head carrying a cutter susceptible of either a horizontal or vertical motion or adjustment, as set forth, for the purpose of turning off work, either inside or outside, that will not revolve between the columns.

I also claim arranging two, three, or more supporting columns, in rear of a plane drawn through the line of centres of the operative parts of the machine, for the purpose of leaving an unobstructed front for the introduction of the piece to be dressed, as described.

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No. 12,712.—MARSHALL BURNETT and CHARLES VANDER WOERD.—*Improvement in Machines for Punching Metal*.—Patented April 17, 1855. (Plates, p. 49.)

Cam *c* and crank *F* are so arranged on their respective shafts, that when the point of the bar *J* is raised up at its front end by the lever *H*, it shall receive a similar rising motion at its rear end by the cam *c*, and thus always move parallel with the bed, so as to bring the punch down square upon the plate to be punched.

*Claim*.—So combining the punching-bar with a vibrating lever at one end and a cam at the other end of it, as that it shall always rise and fall in a plane parallel to the bed of the machine, substantially as described.

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No. 12,723.—DE GRASSE FOWLER and GEORGE FOWLER.—*Improvement in Machines for Punching Metal*.—Patented April 17, 1855. (Plates, p. 49.)

Power being applied to crank *H*, (which is fast on the socket *q*, which latter is loose on shaft *B*.) it will revolve socket *q*, and with it the fly-wheel *G* round shaft *B*, as the socket *q* is fast to the hub of the fly-wheel. The shaft *B* will not revolve, and the punch *d* will remain stationary in its highest position, until the operator depresses the end *I* of lever *n n*. Then the lever *n n*, which has its fulcrum in *s*, will move

the sliding clutch *r* towards the hub of the fly-wheel, the clutch will push the sliding pin *p* through the hub of the fly-wheel, so that the pin will strike against the projection *o* on the collar *F*, which latter is fast on shaft *B*. The collar, and with it the shaft *B*, will now be revolved, and the punch will descend by means of eccentric *C*. When the end *I* of lever *n n* is depressed, the lower end of lever *K*, which has its fulcrum in *l*, will be drawn over and upon lever *n n* by means of spring *m*, as seen in figure 2, and thus keep the machine in gear until the punch has operated upon the material, and has been again elevated to its highest position, when the stud *i* projecting from collar *F* will strike the upper end of lever *K*, and force its lower end off the lever *n n*, and the spring *K* will draw up the end *I* of lever *n n*, thereby forcing back the clutch *r* to its original position, shown in figure 3; when the sliding pin *p* will not reach projection *o*, and the machine will be out of gear, the punch resting at its highest elevation, and the lower end of the lever *K* resting against the side of lever *n n*. Figure 1 is part of a view looking from the punch towards the fly-wheel; figure 2, part of a rear view; and figure 3, a central longitudinal section.

*Claim.*—The peculiar manner of connecting the operation of the two levers (*n n* and *K*) to throw the machine out of gear at the time when the punch is at its greatest elevation, when constructed, arranged, and made to operate substantially in the manner herein described.

No. 12,739.—MARTIN R. GRISWOLD.—*Improved arrangement of Rollers for making Metal Tubes.*—Patented April 17, 1855. (Plates, p. 49.)

The two rollers *B B* have a tapering serrated contour, (figure 4,) the rollers increasing in diameter to conform to the decreasing diameter of the material while being wrought. Each roller has its bearings in a case *A A*, one above the other. The axes of both the rollers form an angle with each other. The tube *J* to be wrought is in contact with the rollers at the point which lies in the intersection of two vertical planes drawn through both the axes. The rollers being revolved, (see arrows in figure,) the tube (being at an equal angle from each roller) is revolved in an opposite direction; and in being drawn through, a spiral indentation is formed on its surface, at the same time elongating the tube. Rollers with smooth faces are then employed to finish the article. The cases *A A*, resting on central pivots, can be so turned as to form any desired angle between the axes of the rollers, and then they are secured to the frame. Between the rollers, and secured to the frame, is the guide-plate, (figure 3,) having an opening in its centre sufficient to admit the lower roller *B* to project through and above said guide-plate. The two slides *c c*, which carry guide-rollers *D D*, can be adjusted on the guide-plate by screws and nuts at their outer ends. Two pairs of arms *v v* projecting from the guide-plate serve to guide and keep the material in its proper place between the rollers *B B*. The upper roller *B* can be set nearer or farther off the lower roller *B*, by means of set-screws *E E* acting against the sliding journal-boxes of said upper roller, thereby allowing tubes of any diameter to be wrought with one pair of rollers. The driving pulley *G* transmits motion (by

means of universal joint I) to pulley H, and from this to the upper roller-shaft by means of a gear-chain. Another gear-chain, on the rear side of the machine, transfers the motion of pulley G to a pulley below, which, by means of universal joint L and pulley K and chain imparts motion to the lower roller-shaft.

*Claim.*—The arrangement of the adjustable smooth or serrated rollers, whose axes cross each other, as herein set forth, with the guide-plate and slides, and guide rollers, for making seamless metal tubes, as described.

No. 12,767.—JAMES H. THOMPSON.—*Improvement in Machines for Planing Metal.*—Patented April 24, 1855. (Plates, p. 50.)

The nuts *o*, or the bar to be planed, are placed upon a mandrel E, as seen in figures 1 and 3. The mandrel platform D is then adjusted by means of a set-screw and vertical slot (not shown in the figures). The clutch U being moved towards driving-pulley O, shaft N revolves and rotates the disc C, by means of gearing M L J I, and as the cutters *c* project gradually further from the centre of disc *c*, in consequence of its scroll-form, (see figure 3,) the cutters will plane off one side of the nuts *o* at one revolution, of the disc, the sides of the nuts being equal in width to the space or difference between the longer and shorter diameter of the disc. When the disc has made one revolution, the projection *j* strikes against the upper end of the lever H, and depresses it, and throws the pin *h*<sup>1</sup> on said lever out of the ratchet, and the weight *h* rotates the drum G, and consequently the mandrel E and nuts *o*, the space between two teeth of the ratchet thereby presenting a new side of the nuts to the cutters, and so on.

As shaft B rotates, the arm W strikes against one of the radial arms P, and moves the arm a certain distance at every revolution of the shaft. When the arm to which pin K is attached is moved, said pin throws the lever V upward, and the notch *l* is raised from pin *m* on sliding-bar R; the spring S operates the sliding-bar, and disconnects the clutch U from pulley O. The number of arms, of course, correspond to the number of sides of the nuts or bar.

*Claim.*—1st. Planing the sides of nuts of prismatic bars by means of a series of cutters *c* attached to the periphery of a disc C, of scroll form, so that each cutter will project a trifle further from the centre or shaft B of said disc, and thereby allow the whole number of cutters to pass over and plane the whole surface of each side of the nuts or bar at one revolution of the disc, as herein shown and described.

2d. The employment or use of the disc C, with cutters *c* attached to its periphery as herein shown, in combination with the intermittingly rotating mandrel E, for the purpose as set forth.

3d. Rotating the mandrel E intermittingly by means of the lever H, projection *j* attached to the disc C, and the ratchet E, and drum G operated by a weight *h*, or its equivalent.

4. Operating the clutch U by means of the radial arms P, lever V, and spring S, attached to the sliding bar R; the arms P being acted upon by the arm W on the shaft B, as herein shown and described.



No. 12,799.—JEREMIAH STEVER.—*Improvement in Machines for Burnishing Metals*.—Patented May 1, 1855. (Plates, p. 50.)

The joints of the connecting rod I and the slider H are so arranged that when the slider is depressed far enough on the rod G they may be brought into line with the axis of the rocker-shaft E; when in such position, the slide is sustained upon a screw-nut K screwed upon rod G. The driving-shaft D transmits a rocking motion to shaft E by means of rod L. The slider H is raised or lowered upon rod G by means of fork M.

By these means the burnisher A may not only have a reciprocating motion imparted to it, but this motion may be either arrested or regulated while the rocker-shaft is in motion.

*Claim.*—The arrangement of the connecting rod I of the burnishing slider B, the rocker-shaft E, the slider H, the rod G, and the bow or stirrup F, whereby the movement of the burnisher may not only be entirely arrested while the rocker-shaft is in motion, but may have given to it such an extent of reciprocating movement as occasion may require.

No. 12,971.—ALFRED B. SEYMOUR.—*Improvement in Machines for Helically Creasing Sheet Metal Pipes*.—Patented May 29, 1855. (Plates, p. 50.)

This improvement consists in combining with the swages A a gauge-plate B and different sizes of screws D, (with gauges,) to cause the swages to move nearer to the gauge-plate in forming the screw. The machine can be set for as many sizes of pipe as there are screws D, with their corresponding gauges E. Upon the top edge of the gauge-plate there is an indicator F. By turning thumb-screw G, the gauge is set at any angle required; the scale marked and numbered upon the indicator being the guide for the operator. When the gauge-plate is set, it is required to set the gauge E in the proper screw D, the screws D being made fine or coarse, according to the size of pipe to be made. When both are set to correspond, the pipe is swaged in the ordinary manner of swaging, but a spiral is formed by the swaging rollers being moved up towards the gauge-plate.

*Claim.*—The plate B, having a gauge between the shafts of the creasing-rollers, and adjusted by a set-screw, so that the proper inclination may be given to the end of the pipe.

No. 13,046.—ORSON W. STOW.—*Improvement in Sheet Metal Folding Machines*.—Patented June 12, 1855. (Plates, p. 50.)

A, bed plate; B B, standards carrying the head C, to which folding plate D is secured, and containing the bearings for the journals *a* of the front folding-bar E, which is turned in the usual manner, (by means of crank F,) from position fig. 1, into position fig. 3; G, back folding-plate hung on centres *b b*, so as to be capable of swinging upwards from position fig. 1, into position fig. 3; H, adjustable gauge secured to

G, to regulate the width of the lap; I, cam at one end of bar E; J, arms attached to corresponding end of back folding-bar; c, friction roller.

The plate *d* (in fig. 3, *d*<sup>1</sup>) is laid upon the folding-bars under the folding-plate, and the crank F is thrown back, (see fig. 3,) whereby not only the front folding-bar is thrown up, but at the same time, by the action of cam I upon arm J, the back folding-bar G is raised; thus, the lap is completed (see *d*<sup>1</sup>) at one operation.

The inventor says: I do not claim the arrangement of the folding-bars at right angles, or thereabouts, when open to the folding-plate, and effecting the fold by the movement of both bars to bend the edge and body of the plate on opposite sides of the stationary folding-plate or former; as such an arrangement, under a separate and disconnected operation of the bars, is old.

But I *claim*, in folding machines which have the folding-bars E and G arranged and operating in connexion with a folding-plate D, as described, effecting the simultaneous action of the two folding-bars, by so connecting or driving them, that upon operation being given to the one folding-bar, the other folding-bar is set in corresponding action or motion thereby; whereby the folding-plate D is relieved from unequal and varying strain or pressure on its one side or face, the two folding-bars are necessitated to act in unison, and the one operative lever serves to set both folding-bars in motion, as set forth.

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No. 13,255.—EDWIN ELLS.—*Improvement in Machines for Forming Metal Tubes*.—Patented July 17, 1855. (Plates, p. 51.)

The inventor says: I do not claim the employment of rollers alone to give form to the tube; neither do I claim bringing the strip or skelp of metal, of which the tube is to be made, to a form whose transverse section resembles the letter U, when this is performed by separate means unconnected with the rollers.

But I *claim*, arranging the rotary bur-cutter I between the preparatory U-shaped die *a b* and the rollers G G, substantially as described, whereby the scarfing operation is performed at the same time as the forming operation, and the forming machinery serves to hold and feed the strip or skelp in a suitable manner to receive the scarfing operation.

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No. 13,295.—CEPHAS APPLEBEE.—*Improvement in Machines for Cutting Sheet Metal*.—Patented July 24, 1855. (Plates, p. 51.)

A piece of metal is placed and confined between the clamps B B. This having been done, the frame A is moved aside until it is arrested by stop I, so as to introduce the metal between the blades of shears N L, when the upper blade is forced down and cuts off the end of the plate. Next, the frame A is moved back so as to force the metal between the rotary cutters D E, which reduce it to the section of an annulus. Finally, the frame is moved against stop K, and the other side of the metal cut off by the shears M N.

The piece of metal, when cut out, is represented in fig. 3.

The inventor says : I do not claim the movable bar A, its clamps, and one or two sets of rotary cutters, arranged and operating together, as described.

But I *claim* the combination therewith of the index limb or arc, the movable radial supporting arms, and their two end shears, the whole being applied together and used to operate on a piece of metal or other material, and reduce it to the shape of an annular section, suitable for being bent into the shape of a conic frustum, in manner and for the purpose specified.

No. 13,625.—WM. SELLERS and JAMES WALKER.—*Improvement in Moulding Circular and Under-cut Work*.—Patented October 2, 1855. (Plates, p. 51.)

The half pattern B is turned down into the sand *s* by means of revolving the axle A. When the sand has properly packed about the pattern, it is brought slowly out of the sand by revolving the axis. The other half of the mould is to be made in a similar manner. The casting will produce a grooved pulley.

*Claim*.—The method of moulding circular under-cut work, herein described.

No 13,118.—ISAAC H. STEER, assignor to HENRY CARTER.—*Improvement in Making Nuts*.—Patented June 19, 1855.—Antedated December 19, 1854. (Plates, p. 51.)

The bar (heated to a welding heat) is placed in groove B, its extremity in contact with the back side of the die. The upper swage I now descends, and a piece is cut from the end of the bar by the action of the front edge *i* of swage I and the fixed cutter C; this piece is forced into the die by the continuous downward movement of the swage, the middle, or the portion removed to form the eye, resting upon and being detained by the fixed punch D, while the rest of the piece is forced down until a core is formed which passes into the cavity in the end of swage J and out at K. The continuous descent of I serves to compress the material between the lower surface of swage I and the upper surface of swage E. Lever F<sup>1</sup> serves to raise the swage E and expel the finished nut.

I *claim*, 1st. Making a nut at a single operation, from a heated bar or plate of metal, by cutting off the blank from the bar, punching a hole or eye through it, and swaging it into shape, substantially as set forth.

2d. Punching the eye of the nut in a die or press-box, by which it is surrounded and firmly supported, and thus prevented from straining or bursting during the operation, substantially as set forth.

3d. Shaping nuts by subjecting them while hot to powerful and sudden compression on the punch and in the punching-die, substantially as set forth, whereby they are finished with such a degree of smoothness, regularity, and precision, that in the condition in which they

come from the machine they are fit to use in the construction of most kinds of machinery, and are at the same time sounder and stronger than unpressed nuts made by machinery.

No. 12,194.—ROBERT BRAYTON.—*Improvement in Machines for Making Nuts and Washers*.—Patented January 9, 1855. (Plates, p. 51.)

The head-block  $F^{11}$  is attached to rod  $F$  of the piston of steam cylinder  $D$ , and slides in guides  $G\ G$ . The plates  $H^1\ H^1$  ease the action of the machine at the termination of the back stroke, as the head-block is brought into contact with the plates, directly after the nut is thrown out. The plates  $H\ H$  ease the action of the punch and dies, and prevent them from straining when brought into contact in forming nuts and washers, and also gauge the nut or washer to any thickness, according to the number of plates. Die-block  $I$  is secured to anvil  $J$  by the side-keys  $K\ K$ , by which it is readily adjusted. One end of the guide-spring  $L$  (which spring is secured to bed-plate  $A$  by means of brace  $L^1$ ) surrounds the upper portion of the die-block on three sides, (see fig. 2,) and is raised forming a shoulder above the die-block on two sides  $L^2\ L^2$ , (see fig. 3,) which are a little above the die-block; thereby it does not become heated, as would be the case if the bar rested upon the die-block. By means of this guide the bar is quickly adjusted in place for the dies. The punch  $M$  is fitted to the head-block, and extends through the check  $N$  and check-plate  $N^1$ , so that they slide independently of the punch. The check  $N$  slides also in the forming-box  $O$ , while the box is secured in the ring  $P$ . When the head-block descends to position, fig. 1, die-block  $I$  passes a little into box  $O$ ; the nut is thereby cut off from the bar, and it is punched by the punch passing into the hole of the die-block; the nut or washer being compressed into shape in the chamber of the forming-box. Thus the nut is finished at one stroke of the piston. When (during the ascent of the piston and head-block) the check-plate  $N^1$  strikes against the check-bars  $B^1\ B^1$ , the nut is thrown out.

The instantaneous action of the machine prevents the tools from being injured by a protracted contact with the heated metal.

*Claim*.—1st. The arrangement of the forming-box  $O$ , case  $P$  secured by the plate  $Q$  to the head-block  $F^2$ , operated by the piston  $F$  in the cylinder  $D$ , as described, in their relation to the check  $N$ , check-plate  $N^1$ , check bars  $B^1\ B^1$ , punch  $M$ , and die  $I$ , for the purposes and as herein set forth.

2d. The metallic plates  $H\ H$  and  $H^1\ H^1$ , as arranged in the slides  $G\ G$  in relation to the head-block  $F^2$ , for the purposes described.

3d. The spring gauge-bar  $L$ , the same being to protect the bed-die from the heat of the blank or nut-bar, and also to gauge its feed, as set forth.

No. 13,252.—RICHARD H. COLE.—*Improvement in Nut Machines*.—Patented July 17, 1855. (Plates, p. 52.)

The bottom  $j$  of the nut-box is combined with a hollow holder  $j^1$ ,

which is secured within a recess in the forward projection of the reciprocating plate H, which latter is forced forward by a cam P on revolving shaft J, and forced back by the pressure exerted by the punch *d* upon bottom *j*, when a nut is formed by the action of said punch. This pressure against the bottom of the nut-box is resisted by means of a crank on oscillating shaft L, whose wrist  $L^1$  is received into a rectangular box  $e^1$  that works in a transverse slot in plate H, and by the weighted lever A, (B being the weight,) which lever projects rearwards from said shaft. Plate H is thrown forward by cam P a sufficient distance to carry the end of the bottom *j* entirely through the box, for the purpose of enabling it to discharge the finished nut; but the moment P ceases to operate upon H, the cam *m*, on rotating-shaft J, strikes against friction-plate  $m^1$ , on the under side of shaft L, and elevates said shaft; and by so doing causes its crank  $L^1$  to operate plate H and draw the bottom *j* into the nut-box a sufficient distance to receive the blank for a nut at the moment that it is cut off by the punch. The mandrel *e* pierces the nut.

To adapt the depth of the nut-box to different thicknesses of nuts to be formed, keys  $p^1$  of different thickness may be inserted between plate  $m^1$  and lever A; and to cause the cam  $m^1$  to operate for exactly the proper length of time upon H, the said cam is divided into two parts, which interlock each other in such manner that their bearing face may be extended or contracted, and so secured by screws or wedges.

*Claim.*—Arranging the movable bottom *j* of the nut-box in such a manner in relation to the movements of the punch *d*, that when a nut is being formed in the nut-box, its bottom will be forced against a yielding support, for the purpose of insuring in all cases perfectly shaped nuts, and enabling the machine to self-adapt itself to bars of different thicknesses, substantially as set forth.

No. 13,720.—ROBERT GRIFFITHS.—*Improvement in Nut Machine.*—Patented October 30, 1856. (Plates, p. 52.)

The heated bar is introduced between the cutting and sliding boxes F and the stationary boxes *a*. Cams (not shown in the engraving) cause the boxes F and the punchers G to move forward, passing the boxes *a*. Other cams operate the table so as to move the lower table up and the upper table down, and to compress the heated bar at the time when the sliding boxes and punchers pass the stationary boxes, thereby severing bars into nuts, and punching them at the same time; the tables then open again, and the finished nuts descend with the lower table, wherefrom they are removed by a scraper. By making the faces of the table *n n* grooved, hexagonal nuts can be produced.

*Claim.*—The tables *n n* with the boxes and punchers, whether connected together or not, arranged and operating as described.

No. 12,191.—ARNOLD BUFFUM.—*Improvement in Machine for Crushing and Pulverizing Ores.*—Patented January 9, 1855. (Plates, p. 52.)

*a* is the bed plate, and *b* the rocker, to which a vibrating motion

around centre *c* is to be imparted by any suitable mechanical means. The ore is fed in at the more elevated part of the bed-plate.

The inventor says: I do not claim to be the exclusive inventor of corrugations in machines for pulverizing ores. Neither do I claim to be the exclusive inventor of an arrangement for a progressive pulverization of ores. Neither do I seek, by *this* patent, to secure the application of the rocking action, independent of its combinations.

But I do *claim*, the rocking action of the crusher, in combination with corrugations on the lower surface of the rocker, and corresponding corrugations on the upper surface of the bed-plate, for the purpose and substantially as described in this specification.

No. 12,576.—REUBEN SHALER.—*Improvements in Ore Separators*.—Patented March 20, 1855. (Plates p. 52.)

The material passes from the hopper on to the screen *m*, where the finer portions pass through the perforations, and are operated upon by the weaker blast coming from blower 2; while the coarser go to opening *w*, and are operated upon by the strong blast coming from blower 1.

The inventor says: I disclaim the use of the screen *m*, except when used in combination with the two sets of shelves 3 3 and the blower *a*, which produces two blasts of unequal force. I disclaim also the use of two sets of shelves when used in combination with a blower of common construction.

I *claim* the described combination of mechanism, which separates the fine earth and small particles of gold from the coarse, and exposes the finer portion of impurities and gold to a moderate blast and the coarser portion to a more powerful blast. The said combination embraces the blower *a*, which produces two blasts of unequal force, the two sets of shelves or inclined planes 3 3, and the screen *m*, or its equivalent.

This combination I claim, when the several parts are used substantially as specified.

No. 13,136.—BEARNARD O'BRYAN.—*Improvement in Machines for Cleaning Ore*.—Patented June 26, 1855. (Plates p. 52.)

The hopper and plate *G H* serve for loosening and shaking off the dirt sticking to the ore; and the ore falling upon screen *K* is cleaned and sifted. The hopper *G* rests upon a platform *P*, having an opening in its centre; and underneath the platform is fastened a frame *Q*, which has an angular shaped centre-piece *R*, sharp edge at top, which centre-piece supports the shaft *B*, and forms an aperture on each side through which the ore falls upon the screen, for the purpose of scattering and breaking the force of the falling ore upon the screen.

*Claim*.—The arrangement of the solid cast-iron horizontal circular plate *H*, having solid raised arms with upright ends, operating in a ribbed cylinder, with the frame *Q* and the centre-piece *R*, for the purpose of scattering the ore on to the sieve underneath, as and for the purposes described.

No. 13,892.—RICHARD VOSE.—*Improvement in Quartz-Crushing Machines.*—Patented December 4, 1855. (Plates, p. 53.)

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I *claim* supporting the centre of the inclined vessel A upon a semi-spherical hub *a*, which works on a raised perforated socket in the plate *c*, whilst the depressed portion of the periphery of said vessel is supported upon a horizontal plane or track *m*, by which I am enabled to impart the requisite movements to the said vessel, through the medium of a shaft descending from its hub *a*, and in connexion with the said method of supporting and operating the inclined vessel A.

I also *claim*, discharging the contents of the said vessel through an aperture in the descending operating shaft, substantially as set forth.

In connexion with the described peculiar manner of supporting and operating the vessel A, I also *claim* the combining of the periphery of said vessel with the supporting frame by means of the springs *s s*, or their equivalents, for the purpose of steadying the movements of said vessel, and preventing it from turning upon its axis, substantially as set forth. ♦

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No. 13,961.—JULIUS E. SCHWABE.—*Improvement in Treating Galena or Lead Ore.*—Patented December 18, 1855.

One hundred pounds of powdered Galena ore are to be mixed with fifty pounds of common rock salt, and to this are added from thirty-seven to forty pounds of an acid of 65° Beaumé. The decomposition begins as the chlorohydric acid, formed by the action of the acid on the rock salt, drives off the sulphur of the ore as sulphuretted hydrogen, and unites with the lead to form chloride of lead. Small quantities of water may be added from time to time, and, under continual stirring and moderate heat, the operation is continued till no more evolution of sulphuretted hydrogen is perceptible. Then more water is to be added, till about one gallon of water is added for every ten pounds of ore. It is then to be boiled for about fifteen minutes, and the insoluble mass allowed to settle. The liquor is then drawn off, and the mass transferred to vats, in which the soluble soda salt is completely washed out. The remaining insoluble whitish substance consists of more or less chloride and sulphate of lead, and contains generally some undecomposed ore, which may be separated by washing. The white salts of lead are now ready for further treatment, which of course has to vary according to the colors which are intended to be made.

I *claim* the method of treating Galena by means of common salt, or its chemical equivalent, and sulphuric acid, in the manner and for the purposes as described.

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No. 12,975.—J. B. TERRY.—*Improvements in Pin-Sticking Machines.*—Patented May 29, 1855. (Plates, p. 53.)

The principal features of this improvement are sufficiently elucidated.

in the claims and engravings. A more detailed description would occupy too much space.

The inventor says: I am aware that plates for crimping, and clamps for holding the paper, have before been used; such, therefore, I do not claim.

But I *claim* measuring off or gauging the paper to the required unequal distances between the rows of pins, and carrying it forward to be stuck by means of the feed-adjusting ratchet-cam *u*<sup>2</sup>, operating in connexion with the crimping-jaws *g* and *h*, or the equivalents of such devices and their operative gear, so that the crimping-jaws have their reciprocating intermittent feed or travel regulated to gradually increase for a certain number of feeds, and vice versa; that is, the advance action of the crimping-jaws made sooner or later, and shorter or longer, without varying their advance terminus, substantially as specified, to measure out the paper into rows or crimps of gradually increasing distance from either end of the stuck sheet, to secure the flat close warp of the sheet from its ends towards the centre, as set forth.

I also *claim*, in connexion with the forceps *k*, or their equivalents, for taking the crimped paper from the crimper, the double clamps or jaws *E*, for holding the crimped paper while the pins are being stuck, as specified.

Further, I do not propose to employ or claim a slide wheel to connect the lower end of the inclined feeding pin-conductor with the upper end of vertical side guides to act as a conveyor, and serving to change the position of the pins from vertical to horizontal, whether such wheel be made with or without countersinks on its periphery.

Nor do I claim a separating wheel to sustain the column of pins, separate them, and deposit them separately, during the revolution of the wheel, in a grooved slide at the proper period, the wheel being made of discs, or with grooves or teeth cut across its periphery.

But I *claim* the employment, for the purpose specified, of the intermittent revolving cylinder *C* formed on or around its periphery, with rows *c*<sup>1</sup> of parallel grooves of the width of the body of the pin, and corresponding with the grooves in the conductor, and arranged in relation thereto, as specified, and of the length of a pin, or thereabout, with a notch or recess at the back end for the head of the pin; each groove serving to count out and convey one pin at a time, and the whole serving to count out and convey to their horizontal sticking position the several pins in a row, as shown and described.

Also, I *claim* the manner described, of operating the distributing cylinder *c* by means of the vibrating arm *J* 3, operated from an intermittent rocking-shaft, and having a spring-ratchet biting into a toothed disc, or the equivalent of these devices, to give to the cylinder its counting out and conveying action, as set forth.

I also *claim* the employment of a sticker *c* 5, arranged at the foot of the conductor, and operating to strike the pin at or near its point, as the pin leaves the conductor, to change the position of the pin and hold it to its seat in the distributing cylinder, substantially as specified.

Lastly, I *claim* forming the inclined conductor at its lower end with an offset *a*<sup>1</sup>, covered by an apron *B* having recesses on its upper edge to allow of the heads of the pins passing there-through, and having a guide *b* on its outer face to carry off the surplus pins, essentially as described.



No. 13,553.—J. B. TERRY.—*Improved Machines for Crimping Paper for Sticking Pins*.—Patented September 11, 1855. (Plates, p. 54.)

The crimping clamps  $b$   $b'$  are hinged together at their upper end and connected to a lever  $c$ , which latter (in connexion with suitable side guides) imparts to the clamps an intermittent vertical movement. The clamps are kept open by a spring, and closed at the proper time during their descent by projecting guides  $e$ . The semi-circular recesses  $f$  are for the purpose of receiving in between the clamps a former or rod  $g$ , round which the paper is compressed by the clamps in closing, and serve as a bed or stop for the paper, to enable the clamps to give the requisite crimp to the paper. This former is operated so as to be withdrawn from between the clamps and paper after the crimp is made, and at the proper period to advance across and occupy the position for its reception between the clamps to effect the crimping.

The paper is represented in the engravings by a strong broken line.

I claim the use of the hinged clamps  $b$   $b'$ , or equivalents, operating together with the folding rod or former  $g$  to crimp the paper, substantially as set forth.

No. 13,785.—THADDEUS FOWLER.—*Improvement in Separating Pins*.—Patented November 13, 1855. (Plates, p. 54.)

The pins are thrown into pan  $H$ , which has a shaking motion, which will cause the pins to slide down on to the endless apron  $F$ ; this apron receives, by any well known mechanical means, a longitudinal as well as a lateral oscillating or rocking motion. The two wire points  $i$  are so near the apron that a pin cannot pass under them, and so near to each other that a pin lying crosswise of the apron must come in contact with one of the points; and thereby be turned lengthwise of the apron: so that if it is straight, it will roll off; but if crooked, it will pass down to the box  $C$ . Thus the imperfect or crooked pins will be separated from the perfect ones.

*Claim*.—The method of separating the imperfect from the perfect pins by the use of an endless apron, having both a longitudinal and a lateral oscillating or rocking motion, when constructed and made to operate substantially as described.

No. 13,175.—FRIEDRICH W. HOFFMAN and CHARLES W. GUSTAV FORDAN.—*Improvement in Machines for Making Rivets*.—Patented July 3, 1855. (Plates, p. 54.)

The upper jaw 27 is secured to the frame of the machine, while the lower 26 slides on the inclined plane of piece 28; the downward motion of 26 is produced by arms 29 fixed on knife-frame 30. This movement of the lower jaw is for the purpose of preventing the bar (passed in through 21 and between jaws 23 and 24) from bending during the process of cutting off, it (jaw 26) being in the same plane with 24, and quite near to it. It likewise allows the finished rivets easily to be pushed out of the die. The chamfer or knife 25 forces jaw 26, with

the piece of iron just cut off, up the inclined plane, and against jaw 27, both acting like a vice and keeping it in its proper place during the process of making the head on it. As soon as the rivet head is finished, the arms 29 press the movable jaw down the inclined plane, the advancing bar pushing the finished rivet easily out of jaw 26.

*Claim.*—The knife 25 so arranged in relation to the lower jaw or jaws, and the header, that while it serves as a cutter it also moves up the inclined plane jaw, and forms a solid support for the rear end of the blank during the making of the head, as set forth.

No. 12,837.—ANDREW JACKSON SUFFERN.—*Improved Machine for Rolling Railroad Rails.*—Patented May 8, 1855. (Plates, p. 54.)

The nature of this improvement is apparent from the figure.

*Claim.*—The employment of three rollers in combination, arranged with their axes in the lines of an equilateral triangle, each roller having a projecting fillet and a groove each side, and the three working in unison, substantially as herein specified, for rolling three-tread rails; each roller forming the surface from the middle of one tread to the middle of the next, and the groove between of such form that each head or tread may be wider than the thickness of the shank, as set forth.

No. 12,500.—WM. E. ARNOLD.—*Improved Sash Fastener.*—Patented March 13, 1855. (Plates, p. 54.)

B is the bolt with the curved shank B', which is confined between the projections *b* and *c* of slide 'S. As the bolt is prevented by the edge of the casing from moving vertically, a vertical motion of slide S will produce the positions of the bolt represented in figs. 6 and 7. The tumbler T has a pin P which passes through slot *m*; while a notch *n*, which slips on to the projection *e* on slide S, enables it to have a slight angular motion, of which *e* is the centre. The upper edge of the tumbler bears against projection X when a vertical pressure is exerted against pin P, which will enable this pressure to move the slide S and consequently the bolt. The notch *n* and pin P mutually act as pivots to each other. Force applied to the bolt will act on the tumbler through slide S and projection *e*, and will consequently tend to bring the projecting angle *g* of the tumbler into one of the notches *h* in the casing, when all further movement will be effectually prevented. But a vertical pressure on pin P will produce a rotary movement in a contrary direction, tending to release the tumbler from notch *h*, and allow it to act freely on the slide through projection X.

*Claim.*—The arrangement of the bolt B traversing in guides, the slide S, and the tumbler T, in relation to the case and the notches *h* herein, as set forth.

No. 12,710.—WILLIAM E. ARNOLD.—*Improvement in Sash Fasteners.*—Patented April 17, 1855. (Plates, p. 54.)

Bolt B fits loose on slide W, and can be inserted as shown either in figure 5 or in figure 6. The bolt being in position figure 6, and the

slide being moved downwards, the bolt will assume position figure 7 and figure 1, and lock the sash. Any pressure on the outer end of bolt B (figure 1) will merely press the slide against the opposite side of the case, but can produce no vertical motion. As the slide is raised, however, by means of knob D, the outer end of the bolt yields to the pressure and moves inward.

*Claim.*—The mode, substantially as herein set forth, of constructing and arranging a slide bolt and case, so as at pleasure to form either a right or left hand lock, the security also of said lock being attained by means substantially as described.

No. 13,491.—ASAHEL GILBERT, Jr.—*Improved Sash Fastener*.—Patented August 28, 1855. (Plates, p. 54.)

The nature of this invention will be understood from the claim and the figure, which represents a horizontal section through the lower sash frame.

I *claim* the hinged cross-bars *c c*, having split knob handles, serving to disengage the fastening in both sides of the sash, and to raise and lower the sash.

No. 13,656.—WILLIAM PATTON.—*Improved Sash Fastener*.—Patented October 9, 1855. (Plates, p. 54.)

A, is part of a window frame. B, the sash. C, is the sash fastener, composed of two hooked arms *a a'*, projecting from shaft *b*, which turns on pin *c*. D, metallic frame screwed to the window frame at 1 1. *d d'* are staples driven into the sash. Hook *a* catches into staple *d*, when the sash is lowered, and thus locks it when down. Hook *a'* takes into one of staples *d'*, and holds the sash any height, varying with the height or distance apart that the staples are set at.

*Claim.*—The arrangement of the self-acting catch or holder, with its staples on the outside of the window frame and sash, so that it may be more easily placed upon any window without taking it out of the frame, or be readily repaired, and to prevent the cutting away or mortising of the frame or sash, as represented.

No. 13,177.—JOHN LOUDON and OTTO AHLSTROM.—*Improvement in Screw Fastenings*.—Patented July 3, 1855. (Plates, p. 55.)

This improvement consists in constructing either a bolt-head or nut, as the case may require, so that the screwing up of the nut or bolt, as the case may be, causes the bolt-head or nut to expand for the purpose of making it fit tightly within an opening in which it is received, and prevent its drawing out.

*Claim.*—1st. Constructing the head of a screw-bolt of fixed wedges or inclined pieces *a a*, and loose expanding pieces *b b*, whereby the act of screwing up the nut is caused to expand the said head, for the purpose of making it fit tightly in a suitable cavity or hole in which

it is placed, substantially as herein described; or what is equivalent, constructing the nut with the said fixed wedges or inclined pieces, and expanding side pieces, so that by screwing in the bolt, it may in the same manner be expanded to fit tightly within a suitable cavity.

2d. Forming the fixed wedges *a a* or inclined side pieces of the bolt or nut up the sides of the bolt, as illustrated in figures 1 and 2, and herein described, so as to get a great length of bearing for the expanding pieces, with a small sized bolt-head or nut. .

3d. Confining the expanding pieces *b b* to a bolt or nut, by means of an elastic ring *c*, substantially as described, which keeps them always in condition to use on the bolt or nut, and which allows them to expand and to remain parallel during their expansion, and contracts the collar when the nut or bolt is unscrewed, and allows the bolt or nut to be removed.

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NO. 13,767.—ELLIOT SAVAGE.—*Improvement in Arranging and Feeding Screw Blanks*.—Patented November 6, 1855. (Plates, p. 55.)

Hopper A has one or more of its inner sides arranged at an angle with respect to the inner surface of a reciprocating slider B, as seen in the drawings; such slides serving to constitute one side of the hopper or receiver A, and also one side of the long opening or space D extending out of the bottom of the hopper, and into a passage or channel E formed between the parallel plates *c d* projecting down respectively from the receiver or hopper and the slider, as seen in the drawings, and leading into an inclined conductor or spout F, disposed as seen in the figures. The said inclined conductor is provided with a long slot or passage *f*, which communicates at its upper end with the channel E, in such manner that the screw blanks may be made to pass out of the said passage and into the inclined conductor, and take positions as represented at *g g*.

The slider B, when the machine is in use, is to have a reciprocating rectilinear movement imparted to it, it being adapted to the hopper in such manner as to admit of such a movement. There is affixed to the hopper a spring or presser H, which is arranged and made to press against the outer surface of the slider, as seen in the drawing, its arrangement being such as will allow and cause the slider to be pressed up against the screw blanks when it is moved forwards, and to give or move away a little therefrom during its backward movement; the same being to facilitate the forward movement of the screw blanks through the passage E and into the conductor.

In operating with this machine, a quantity of screw blanks is thrown promiscuously into the hopper. This done, the slider is to be put in motion forward and backward. By its friction against the mass of blanks, it will cause some of them to fall downward and extend through the openings in the hopper, and to stand in vertical directions, and be supported by their heads resting against the two opposite inclined sides of the hopper.

By the continued movement of the slider, the blanks will be moved through the passage, and successively caused to enter the inclined spout

or conductor F, through which they will be made to travel by their gravitating power, each maintaining its vertical position while passing longitudinally throughout said conductor.

*Claim.*—The combination of the reciprocating slider B, the receiver or hopper A, and the inclined conductor F, the same being arranged and made to operate together, substantially as specified.

Also, combining the spring-presser H with the slider and hopper, so as to cause the slider to operate laterally with respect to the screw blank, as explained.

No. 12,931.—JOHN HENRY WYGANT.—*Improvement in Spikes.*—Patented May 22, 1855. (Plates, p. 55.)

The offset B on spike A serves, just before the locking piece C is driven entirely home, to bend or curl its end, (see figure 1,) and thereby cause it to take a lateral instead of a vertical direction, and, consequently, to take a firm hold in the wood and thus lock the spike firmly in its place.

*Claim.*—Providing a spike A with a level or inclined offset on one of its sides, and employing, in connexion with the same, a light metal bar or locking piece C, substantially as and for the purposes set forth.

No. 13,535.—AMOS WHITEMORE.—*Improvement in Spike Machine.*—Patented September 4, 1855. (Plates, p. 55.)

Roller  $e^1$  is pivoted in the forked end of beam  $f^1$ , which beam is pivoted to carriage  $e$ , to which latter the header  $f$  is attached. The roller  $e^1$  moves forward, together with the beam, carriage, and spike, and at the same time receives a downward motion by means of rollers  $j j$ , (set in standard  $h^1$ ), against which rollers the bevelled end  $f^1$  of the beam strikes during its forward motion; thus the roller  $e^1$  will press the end of the spike between it and the inclined surface  $i^1$ , rendering the point of the spike thus formed the most compact and dense part of the spike.

I *claim*, pointing the spike by means of the inclined bed  $s$ , the advancing roller  $e^1$ , the inclined surface  $f$ , and the pressing roller  $j$ , as set forth.

No. 13,945.—A. M. GEORGE.—*Improvement in Spike Machines.*—Patented December 18, 1855. (Plates, p. 55.)

The bar  $A^1$ , from which the spikes are formed, is placed between the two jaws B B<sup>1</sup>, the end of the bar bearing against the die D, which at this time serves as a stop. Motion being then given to the shaft F, the jaw B will be moved by its cam E towards the stationary jaw B<sup>1</sup>, the back ends of the jaw grasping the bar. The toggle C is then operated by lever D<sup>1</sup> acting against roller  $c$ , and the die D is moved forward and forms the proper head upon the spike; while the lever I is moved outward from the jaws by roller  $f$ , and the cutter  $k$  cuts the blank off obliquely from bar  $A^1$ , and the oblique end is properly bent as the jaw B closes against B<sup>1</sup>. The obliquity of the cutter  $k$  is regulated by

changing the positions of the pivots  $e$   $i$ , which may be done by turning cylinders  $G$   $H$  in the jaws. The cutter is returned by means of lever  $J$  acted upon by cam  $E$ .

The inventor says: I do not claim the jaws  $B$   $B^1$ , nor the toggle  $\dot{C}$ , with the heading-die  $D$  attached; for they have been previously used.

But I *claim* the friction-roller  $f^1$ , and lever  $I$ , to which the cutter  $K$  is attached, when said roller and lever are placed upon adjustable centres or pivots, or rods  $e$   $i$ , arranged substantially as shown, for the purpose specified.

No. 13,841.—DENNIS S. BLUE.—*Improvement in Blacksmith's Striker*.—Patented November 27, 1855. (Plates, p. 55.)

By applying the foot to the treadle  $g$ , which connects with rods  $n$ , and the rods being attached to the ends of the rocking-shaft  $r$ , by means of slots  $q$ , the hammer  $Y$  is actuated. The slotted parts  $j$  of the treadle admit of increasing or diminishing the stroke in the application of the foot; for a slight forward or backward pressure will move the treadle forward or backward, and thus shorten or lengthen the leverage.

*Claim*.—In the construction of the blacksmith's striker, the use of slotted lever-treadle, the slotted lever, and the rock-shaft, substantially as described.

No. 12,219.—WM. J. STEVENSON.—*Improved Apparatus for Soldering Tin Cans*.—Patented January 9, 1855. (Plates, p. 55.)

The clamps  $E$   $F$  being open, (as indicated by dotted lines  $x$   $x$  in fig. 3,) the tin can  $g$  is fitted on mandrel  $A$   $B$ , the section  $B$  of the same being thrown forward, (by bringing lever  $C$  into position indicated by a dotted line  $z$ , in fig. 2,) so as to fill the interior of the can. The clamps  $E$   $F$  are then brought together, (see fig. 1,) the strip of solder  $m$  is laid in the channel between the edges of the clamps and melted by a soldering iron. When the solder has cooled, the section  $B$  is again withdrawn and the can removed.

*Claim*.—1st. The manner herein described and shown of constructing the upper extremities of the jaws of the clamps, for the purpose of forming a groove or channel to receive a strip of solder and confine it where its presence is required after being melted.

2d. The manner herein shown of interposing a strip of wood  $D$  between the cold iron of the mandrel and the lap forming the joint or seam of the can, for the purpose of preventing the solder being cooled too rapidly after it has been melted.

No. 13,392.—JNO. L. IRWIN.—*Improved Mode of Securing Tires upon Wheels*.—Patented August 7, 1855. (Plates, p. 56.)

*Claim*.—Attaching or adjusting tires to wheels by having the ends of the tires bent so as to form lips or projections  $a$   $a$ , through which a screw-bolt  $C$  is passed, for the purpose of drawing the ends of the

tires together, and fitting the same tightly to the felloes or rim, the rim having a recess *d* made in it to receive the lips or projections and screw-bolt, the recess being covered by a cap *D*, substantially as shown and described.

No. 13,256.—JNO. FRASER assignor to LOGAN, VAIL, & Co.—*Improvement in Adjustable Vices*.—Patented July 17, 1855. (Plates, p. 56.)

The vice, when set for gripping taper-shaped articles, is represented by dotted lines.

The inventor says: I am aware that adjustable vices have been previously used; but the jaw only has been arranged so as to turn, the screw remaining stationary, and, consequently, they operate very imperfectly, as the line of pressure and the axis of the screw were not in line.

I do not claim, therefore, an adjustable vice, irrespective of the construction shown.

But I *claim*, having the screw *F*, which passes through the movable jaw *E*, pass through a nut *G* so arranged as to turn, and cause the screw and movable jaw to turn when wedged or taper-shaped articles are to be held, so that said jaw *E* will conform to the obliquity or taper form of the articles, and cause them to be securely grasped by the jaws.

No. 13,489.—ROBT. W. DAVIS and DANIEL DAVIS.—*Improved Vice*.—Patented August 28, 1855. (Plates, p. 56.)

The article to be gripped is placed against the face of the stationary jaw *A*, and the movable jaw *B* is brought into contact with it simply by pushing it up, since the pawl *M* permits the movement of the beam in that direction; pawl *M* will hold the jaw close to the article within a distance less than that between two adjacent teeth of the ratch *a*. A partial turn of cam *E* then immediately wedges the jaws against the article with great force. By reversing the cam the article is again set free; and by lifting the arm *P*, and thereby throwing the pawl down away from the ratch, the jaws can be drawn apart.

The inventors say: We are aware that parallel vices have been heretofore constructed with cross levers and ratchet movement; and do not claim merely such as our invention.

But we *claim* an improved arrangement of the sliding ratch-beam *C*, pawl *M*, and the detachable weighted key *P*, and the cam *E*, all constructed and operated substantially as described.

No. 13,681.—JASPER JOHNSON.—*Improvement in Vices*.—Patented October 16, 1855. (Plates p. 56.)

Before inserting the article *X* between the jaws, the lever *F* is sufficiently elevated to cause the spring *n* to enter a slot in stud *m*, the effect of which is to lift pawl *i* into recess *r*, and leave rack *E* free to move. Jaw *B* is then drawn out and *X* inserted, the jaw *B* at the same time

closing by its weight. The hand of the operator is then placed upon knob H, causing it to drop, and pawl i to engage the rack-bar E. A slight pressure on the knob will cause the pawl to draw powerfully on the rack-bar and compress X between the jaws.

The inventor says: I disclaim the construction of vices where a distinct adjustment is requisite for grasping the article previous to the tightening of the jaws by lever power, as in the patented vice of *Cove*, and the rejected vice of *Pardee*; such constituting no part of my invention.

But I *claim* the combination of lever F f i, swinging lugs l, and rack E, with one jaw A fixed and one movable, in the direction of the rack, arranged and operating as specified, to grasp and tighten by one continuous movement of jaw B, and admitting of change of capacity without adjustment therefor.

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No. 12,275.—HENRY A. FROST.—*Improvement in means of holding Window Blinds*.—Patented January 23, 1855. (Plates, p. 56.)

Fig. 1 represents a front view of the blind and apparatus; fig. 2 a plan of the same.

*Claim*.—The application to window blinds of a semi-circular spring rod E, which may bear upon a wide staple D D beneath the blind C, which acts upon it at all times, as described, so that the blind may be retained in any desirable position.

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No. 13,570.—WM. GROVER.—*Improvement in Cutting Wire*.—Patented September 18, 1855. (Plates, p. 56.)

The wire W to be cut is placed in one of the slots a, which corresponds in size to the wire, the stop E having been previously set, if pieces of the same length are required. The wire is cut by pressing the handles together, which causes the slots a in the two plates B B to cross or pass each other.

I *claim* the use of the circular plates B, having radial slots A formed thereon, for the purpose of holding and cutting wire, together with the gauge E, constructed and operating in the manner prescribed.

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No. 13,651.—WILLIAM LINCOLN.—*Machine for Making Wire Dish Covers*.—Patented October 9, 1855. (Plates, p. 56.)

The carriage D with the dies A B being removed from table G, and the gauge l, as well as the follower B, being withdrawn from cup-die A, a sheet of woven wire, perforated through its centre, is laid upon the top of die A, and with spindle C extending through its perforation. The follower B is then placed on spindle C and forced down thereon, so as to press the sheet of woven wire into the required form. The gauge hoop l is then inserted in the upper part of A, and that part of the wire sheet projecting above the gauge is removed with a pair of shears. Next the rim r is fitted upon that part of the wire sheet which



extends above die A. The carriage D is then brought up into gear with pinion *o*, so as to introduce the rim *r* between the leading rollers U U; next the screw V is to be turned so as to compress the rim between the rollers. This done, the crank T is revolved, such causing the carriage D to turn about and to carry the whole of the rim around between the rollers, and bead it so as to fasten it firmly to the woven wire extending into it. The guide can be lifted (by means of a lever) into the position represented in the engravings, so that it projects into space *b* and rests against the side of it, so as to maintain the carriage D in gear with pinion O.

*Claim.*—The combination of rotary forming and holding dies A and B, with beading mechanism applied to operate therewith, substantially as described.

Also, the guide spindle C, in combination with the cup-die A and follower B, substantially as described.

Also, the carriage D, the guide H, the gearing *a o*, and shaft K, as combined with the dies and beading mechanism.

Also, combining with the cup-die A the movable gauge top *l*, the same being in the manner and for the purpose as specified.

No. 12,198.—CHAS. G. EVERITT.—*Improvement in Ratchet Wrenches.*—Patented January 9, 1855. (Plates, p. 57.)

By taking hold of nut *h*, the pawl *d* (which is constantly pressed towards the ratchet-teeth by means of spring *e*) can be slid in or out of gear with the ratchet; and by screwing up the nut, it may be fixed in either position.

The inventor says: Though I do not claim of itself the form of the ratchet-teeth as represented,

I do *claim*, the employment of the application to a wrench of a ratchet of such form, and a sliding stop, acting as described, to stop or set free the said ratchet at pleasure when the wrench is used for tapping.

No. 12,410.—SAMUEL H. NOBLE.—*Improvement in Screw Wrenches.*—Patented February 20, 1855. (Plates, p. 57.)

When the nut (for instance a four-sided one) has been turned one-fourth of the way round, instead of taking off the wrench and reapplying it to the next side of the nut, the thumb is pressed upon the thumb-piece A and pressed downwards against spring *h*; the part *b* rises then out of the notch *c* of the cylinder, and by slightly pressing the wrench (to wit, the adjustable jaw of it) against the nut, the said jaw will move backward against the spiral-spring *e*, and allow space between the jaws of the wrench sufficient to pass over and around the corners of the nut. By removing the thumb from the piece A, the spring *e* will push out the movable jaw, and the spring *h* will lower the part *b* into the notch *c*, and lock the wrench ready to turn the nut the next fourth of the way round.

*Claim.*—The application of the spiral or other spring, as seen in fig.

2, part *e*; the thumb-piece, part A, *g b*, and the spring under the thumb-piece, part *h*, in such a manner to the common screw of screw wrench, as to create a backward and forward self-adjusting motion of adjustable part of screw wrench now in use.

No. 12,510.—JOS. HYDE.—*Improvement in Screw Wrenches*.—Patented March 13, 1855. (Plates, p. 57.)

This wrench is to be used for grasping angular as well as round forms. The movable jaw D is brought up to the piece *d* to be grasped and held there by pressing H inwards, which will cause the cam G to bind against the shank B. By turning then the wrench in the usual direction, (see arrow fig. 1,) the piece will be grasped between jaw A and gripper E; and the greater the force exerted in turning the wrench, the greater will be the holding force upon the piece; because the piece, as the wrench is turned, has a tendency to turn the gripper upon its pivots *a*, as indicated by the dotted arrow in fig. 1.

*Claim*.—The auxiliary jaw or gripper E applied to, or inserted within, either the stationary or movable jaw of a hand or screw wrench; said jaw or gripper being constructed and arranged as shown, or in an equivalent way, so as to bind or press the article between it and the stationary jaw with a force proportionate to that exerted in turning the wrench, as set forth.

No. 12,590.—L. D. GILMAN.—*Improvement in Screw Wrenches*.—Patented March 27, 1855. (Plates, p. 57.)

The wrench being adjusted and set for use by means of an eccentric E, which, acting upon a strap of the toothed adjustable plate D, causes its teeth to lock with the shank teeth, thereby holding the jaw of the wrench firm. *d* are springs which press the toothed plate back clear of the teeth of the shank as soon as the eccentric is brought back from the position represented in dotted lines, into the position shown in full lines.

The inventor says: I make no claim to the teeth on the sliding bar of the wrench.

But I *claim* the arrangement of the adjustable toothed plate with its springs, the toothed adjustable jaw, and the eccentric with its strap attached to the toothed plate; the several parts being operated in the manner as described and shown.

No. 12,935.—FRANCIS S. COBURN, assignor to RUGGLES, NOURSE, & Co.—*Improvement in Screw Wrenches*.—Patented May 22, 1855. (Plates, p. 57.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—Arranging and combining with the angular recessed head C of a handle A, a movable notched jaw, operated in manner with

respect to the recess of the head, and by means, substantially as described; the same rendering the wrench adjustable to nuts or screw-heads of different sizes, and capable at the same time of embracing them on their four sides.

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No. 13,120.—CHARLES B. BRISTOL.—*Improved Wrench*.—Patented June 26, 1855. (Plates, p. 57.)

The nature of this improvement will be understood from the engravings.

*Claim*.—The combination of the disc with the stock and binding pin, when the whole is constructed, arranged, combined and made to operate, substantially as described.

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No. 13,221.—BENJ. F. JOSLYN.—*Improvement in Slide Wrenches*.—Patented July 10, 1855. (Plates, p. 58.)

The nature of this improvement is apparent from the claim and engravings.

The inventor says: I do not claim making a slide wrench with one part or jaw sliding in the other, and surrounded by a nut, as such.

But I *claim* the nut E surrounding both parts of the jaws, and long enough to give the required motion, with a thread on its inside working in the edge of part B; the part A surrounding the part B, with the slot from C to D, as described, and the part B sliding in A, with a thread on its projecting edge to receive the nut E; the whole arranged as described for the purposes set forth.

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No. 13,388.—ALDEN GRAHAM.—*Improved Wrench*.—Patented August 7, 1855. (Plates, p. 58.)

By turning ring C the jaws E are operated, either end of the jaws being made to grasp the nut or article to be turned; and the handle A may be moved in one direction without turning the plates D and jaws E, as the pawl *h* will slip over the teeth *g* in plate D; but, when moved in the opposite direction, the pawl will take along the plate D and the jaws E, to turn with the handle.

The inventor says: I do not claim the arrangement of a plate provided with ratchet teeth, in which a pawl catches, so as to allow the implement to be operated without removing it from the nut or other article to be turned; as ratchet wrenches have been previously used.

But I *claim* fitting the jaws E, when turning on pivots in the slot, and operating the same by a ring C, having a screw thread *a* on its inner surface, to work between threads *f* cut on the outer surface of the jaws, in the manner and for the purpose set forth.

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No. 13,456.—JOHN D. DALE.—*Improved Wrench*.—Patented August 21, 1855. (Plates, p. 58.)

When it is designed to turn a nut to the right, the hub F is inserted in its opening from the upper side, as in figure 1, and the jaws D are

made to grasp the nut by turning the plate  $E^1$ , with the worm  $E$  on its lower surface, to the left. A vibrating motion is then given to the lever  $K$  with one hand, while the handle  $A$  is held with the other hand, which causes the hub  $F$  to move correspondingly, and to alternately move the ends of the pawls  $G\ G^1$  against the ratchet teeth of  $B^2$ .

When a nut is to be turned to the left, the hub  $F$  is taken out and inserted from below, when the movements will be reversed.

I *claim*, 1st. The combination of the reversible flanged and winged hub  $F$  and pawls  $G\ G^1$ , with the upper and lower ratchet wheels  $B^1\ B^2$ , constructed and operated as described.

2d. The combination of the angular jaws and worm plate  $F$ , or their equivalents, with the upper and lower ratchet wheels  $B^1\ B^2$ , and the mechanism giving them a continuous motion either to the right or left.

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No. 13,597.—HENRY J. BEHRENS.—*Improvement in Wrench*.—Patented September 25, 1855. (Plates, p. 58.)

When the jaw  $b$  is pressed back by the strain, there is but a small amount of friction upon the eccentric  $c$  to carry it back, while its serrated periphery holds upon the wrench bar, increasing its holding power with any increase of strain; and when the strain is removed, it allows an easy and expeditious release, so that the jaw can be moved back and forth by one hand.

*Claim*.—The employment of an eccentric, toothed on its periphery, and held down by a spring, as described, in combination with the smooth bar wrench, in the manner and for the purpose herein set forth.

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No. 13,617.—JOS. HYDE.—*Improvement in Screw Wrenches*.—Patented October 2, 1855. (Plates, p. 58.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—The eccentric shaft  $e$  and thumb piece  $c$ , as they are arranged in relation to the screw  $b$  of the movable jaw, so that the screw may be thrown in and out of gear with the bar, and the jaw be moved by sliding it on the bar or through the turning of the screw, as set forth.

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### III.—FIBROUS AND TEXTILE.

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No. 13,391.—LIVERAS HULL.—*Improvement in Braiding Machines* -- Patented August 7, 1855. (Plates, p. 59.)

Underneath each of the bobbins  $F$  of a common braiding machine, and applied to the racer frame  $D$  so that it may play freely upward and downward, is a weight  $K$  suspended by means of a hook to the thread  $b$  that proceeds downward from the bobbin; the thread, after leaving the hook, passes up through an eye  $c$  in the racer frame, and thence towards

the centre of the machine. The object of these weights is to maintain an equality of tension upon the thread during the eccentric movements of the racer. By applying the weights to the racer, (and not to the bobbins, as was usual heretofore,) no thread guides between the bobbin and weight are necessary, and there is no lifting action upon the bobbin, while it and the weight are freely exposed in order to enable the attendant to mend broken threads with facility. During the elevation of the weight it will be carried against this lower arm of lever pawl H, releasing said pawl from the bobbin ratchet G, and thereby permitting the bobbin to revolve and give out thread; the revolution being effected by the gravitation of the weight. As soon as the weight falls away from the pawl, the latter will be forced against its ratchet by the contractile power of spring I.

*Claim.*—The arrangement of the bobbin, the pawl, and the weight within the racer, or with respect to one another therein, substantially as described, the same presenting advantages as specified.

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No. 13,719.—LIVERAS HULL.—*Improvement in Machinery for Braiding.*—  
Patented October 30, 1855. (Plates, p. 59.)

The thread *f* from the bobbin is first carried directly through the tubular journal C; from thence it is bent towards the periphery of the pulley turned underneath the hook *a* thereof; thence wound one or more times entirely around the pulley, or in the groove of its periphery, and thence carried upward and through an eye *g* made in the frame of the racer. From said eye the thread extends to the whip or point where the braiding is to be performed. During the eccentric travelling movement of the racer, while the braiding operation is being carried on, the draft on the thread will cause the pulley to rotate or give way, and wind up the spring coiled within it. When the racer approaches the central part of the braiding machine, the retractive power of the spring E will rotate the pulley or turn it backward, so as to cause it to take up the slack of the thread and maintain the thread properly extended. When the draft on the thread becomes sufficient to carry the stud *b* around against the lever pawl F with force sufficient to tilt it, and throw it out of action upon the ratchet, the bobbin will be relieved and will be caused to turn by the draft on the thread, so as to give out more thread as soon as the bobbin commences to rotate. The spring, being relieved from the draft on the thread, will turn the pulley backward, and not only take up the thread given out from the bobbin, but move the stud *b* away from the lever pawl, so as to permit the spring *e* of said pawl to force the pawl up to the ratchet and arrest the rotary movement of the bobbin.

The inventor says: I do not claim combining with the racer and its bobbin machinery for taking up the slack of the thread, and causing the bobbin to give out or deliver thread, as the same may be necessary.

But I *claim*, arranging and applying a rotary spring-pulley and a tripping steed, or its equivalent, and tubular guide-journal with respect to the bobbin and its spring pawl, and so as to operate therewith substantially as specified.

No. 12,469.—HORATIO N. GAMBRILL and SINGLETON F. BURGE.—*Improvement in Carding Machines*.—Patented February 27, 1855.—Patented in England August 22, 1854. (Plates, p. 59.)

D<sup>1</sup> D, D<sup>1</sup> D are two pairs of lap-rollers, and E E<sup>1</sup>, E E<sup>1</sup> two pairs of feeding-rollers, by which the lap is fed to the cylinder A at two points, so as to furnish the lap in thin sheets to the cylinder, without increasing the velocity of the feed-rollers, or causing the card-teeth to pass through so thick a fleece.

The cam F works shipper G, the lower end of which straddles the endless belt H, which passes around two conical pulleys I J. Pulley I receives its motion from cylinder A by means of pulley and belt K L, and transmits motion through belt H to pulley J. The two cone pulleys stand in a reversed position in relation to each other. When the belt H is equi-distant from the extreme ends of the pulleys, the relative velocities of the peripheries of cylinder A and stripper M are the same; but as cam F revolves, the shipper G carries the belt back and forth from end to end of the cone pulleys, thereby changing their relative velocities; so that half the time the cylinder A is stripping the stripper M, and during the other half of the time the stripper M is stripping the cylinder A.

*Claim*.—The application of two or more sets or pairs of feeding rollers to the working cylinder of carding engines, substantially in the manner and for the purpose set forth.

Also, the reversing of the relative velocities of the peripheries of the main working cylinder and stripper M, at intervals, by an automatic movement, for the purpose of cleaning or preventing the clogging or packing of the main cylinder, substantially as described.

No. 13,395.—JOHN G. McNAIR.—*Improvement in Manufacturing Carpets*.—Patented August 7, 1855. (Plates, p. 59.)

The object of this invention is to produce a fabric having a figure on the two surfaces like ingrain carpets, with the colors reversed, but without a figuring warp. Figs. 1 and 2 are views of the upper and under surfaces of the fabric; fig. 3, a longitudinal, and fig. 4, a cross section; *a*, threads of the warp operated by a jacquard or other figuring apparatus; *b*, binding in warp of finer thread, operated by the usual harness, to be operated once for each throw of the shuttle; *c*, the woolen weft, mounted in two shuttles operated alternately, is, one or both, party-colored.

*Claim*.—The fabric, substantially as described, by the double wefts, one or both of which is party-colored, in combination with the two sets of warps, one to divide and ingrain the wefts, and the other to bind in the wefts, substantially as and for the purpose specified.

No. 13,702.—SAMUEL FAY.—*Improvement in Finishing Carpets*.—Patented October 23, 1855. (Plates, p. 59.)

The carpet B is wound upon shaft *c*, power being applied to pulley C, Shaft *d* may be operated by a crank or otherwise, and when it is de-

sirable to lift the pressure roll S (weighted down by weight *w*) from off the carpet roll, for the purpose of taking the latter out, the carpet is wound tight upon the roll without being unduly stretched.

*Claim.*—Giving to woven figured fabrics, such as carpets, the finished appearance derived from the application of heavy pressure, whilst placing the goods in a roll for convenience of transportation, and without distorting the pattern by an irregular undue stretching of the fabric, substantially as described.

No. 13,018.—O. B. TOMLINSON.—*Improvement in the Manufacture of Ornamental Felt Cloth.*—Patented June 5, 1855. (Plates, p. 59.)

After the batting has had the colored wool, to form the design, placed upon its surface, (fig. 1,) the sheet of batting is to be hardened to enable it to be handled while it undergoes the shrinking process. It is hardened by wrapping it in a cloth which is sprinkled with water, and placed upon a hot iron plate so as to raise the moisture into steam. It is then ready to undergo the shrinking or felting operation. The latter process fixes the colored wool among the uncolored wool in the batting, so as to form part of the body of the felt, (see fig. 2,) and thus an article is produced superior to printed fabrics.

The inventor says: I do not claim the incorporation of rovings of different colors in the manufacture of felt stripes, checks, or plaids.

But I *claim* the manufacturing of ornamental felt fabrics by placing colored wool, fur, or any other shrinking substance, upon the surface of a sheet of batting, and shrinking the same colored wool, &c., into the body of the felt, in the manner substantially as described, to form an ornamental fabric of the character and quality described, for the purpose set forth.

No. 13,543.—JOSEPH D. ELLIOT.—*Improvement in Machinery for Folding and Measuring Cloth.*—Patented September 11, 1855. (Plates p. 59.)

The cloth (see strong broken line in the figure 2) passes over rollers A and B, underneath friction bar C, over roller D, and down to blades E E<sup>1</sup>. The crank F imparts a reciprocating motion to the upper end of arm G. The pins K connect the blades E E<sup>1</sup> with the end of pitman H, and work through slots in the upper end of arm G, which slots allow the blades to adjust themselves to the increasing thickness of the pile of cloth on the table M. One end of the cloth is held by jaw L; the blade E carries the cloth to the jaw L<sup>1</sup>, which is raised at the time the cloth arrives, and is pressed down immediately afterwards to take hold of the cloth. The blade E<sup>1</sup> then carries the cloth back to jaw L, where it is again clamped by the said jaw, and so forth. The blades turn on pivot K, and are guided by a rod N. The rod N is attached to the blades, and slides through a nut or swivel O, which latter is free to turn on a pivot attached to frame P.

I *claim*, in connexion with the pivoted vibrating blades E E<sup>1</sup>, the rod and swivel, for causing said blades to make a half revolution during each vibration, substantially as described.

I also *claim* the friction bar or brake C, in combination with the rolls B D, for preventing the cloth, by the momentum of the blades, from paying off faster than it is folded, substantially as described.

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No. 13,888.—NATHAN SIMMONS.—*Improvement in Cloth-Stretching Rollers*.—Patented December 4, 1855. (Plates, p. 59.)

The discs A D B, turning loosely on shaft C, are braced together by rods E, which latter support the stretchers I H G F and I<sup>1</sup> H<sup>1</sup> G<sup>1</sup> F<sup>1</sup>. These stretchers slide freely on the rods, and each set of stretchers is connected to cross-bar L, and one to the other by links K. Studs O, extending from the under side of each outer stretcher I or I<sup>1</sup>, enter into, and are acted upon by, a grooved cam P or P<sup>1</sup> fixed upon the stationary shaft C. During half a revolution of the stretching roller, the stretchers I and I<sup>1</sup> will be moved (by means of said stud and cam) parallel to the axis of the roller, and away from the middle disc D; and during the succeeding half revolution, they will be moved back towards the middle disc. The several stretchers of each set will be moved consecutively, as the outer stretcher I or I<sup>1</sup>, in moving outward, takes up the slack of one after the other; thus the cloth will be stretched width-wise, so that the first strain will be on the selvage, which will be followed by consecutive strains acting in a direction away from the middle of the cloth, and straining the cloth between the middle of it and each stretcher in action upon it.

*Claim*.—The cloth stretching roller or cylinder, imparting to its sectional stretchers, while the roller is in revolution, consecutive movements in one direction, or away from the middle of the roller, in the order as described, and by mechanism substantially as specified, or any mechanical equivalent.

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No. 13,900.—JAMES BAXENDALE.—*Improvement in Machinery for Folding and Measuring Cloth*.—Patented December 11, 1855. (Plates, p. 60.)

The end of the cloth is first attached to the hooks *i*, while the laying carriage D E is directly over said hooks. The nuts I I<sup>1</sup> are turned by hand to carry their nuts close up to the table A, and the folding rods are all raised by hand to upright positions; the carriage is then moved. Just before the carriage arrives at the other end, the dog *g* comes in contact with ratchet-wheel *e*, and turns the screw I far enough for the nut J to act upon the toe of the innermost of the set of rods *b b*, and cause the said rod to fall upon the cloth and hold it down flat upon the table. The laying carriage is then returned to the opposite end, and the cloth, being drawn tightly over the folding rod *b*, is caused to be again unrolled from the roll of cloth; and just before the carriage arrives at the end of this movement, the dog *g*<sup>1</sup> acts upon the ratchet-wheel *e*<sup>1</sup>, and turns the screw I<sup>1</sup> far enough for nut J<sup>1</sup> to act upon the toe of the first rod *b*<sup>1</sup>, which is thereby caused to fall upon the cloth. The next movement of the carriage will operate upon the second rod *b*, and the next movement will actuate the second rod *b*<sup>1</sup>, and so forth.



(the dog at each time acting upon the ratchet to move the screw far enough for the nut to act upon the toe of the next folding rod).

*Claim.*—1st. The employment of separate rods  $b\ b\ b^1\ b^1$ , for the several folds of the cloth, the said rods being arranged and operated to fall across the successive layers of the cloth as they are laid, by the movements of a suitable reciprocating carriage over the folding table, and to remain within the folds, till the folding of the whole piece is completed, substantially as set forth.

2d. The manner of operating the said rods  $b\ b\ b^1\ b^1$  to throw them from their upright positions across and upon the cloth, by means of the nuts  $J\ J^1$  and screws  $I\ I^1$ , which are actuated by the movements of the reciprocating carriage, substantially as described.

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NO. 12,668.—BYRON BOARDMAN and GEORGE C. SWEETT.—*Improvements in Machinery for Winding up Lines, Twist, or Cord.*—Patented April 10, 1855. (Plates, p. 60.)

Before the commencement of the winding, the sweep shaft D, the shaft F, and all the parts connected therewith, are in the condition represented in figures 1 and 2, and the pulley G to be disengaged; but the clasp rod U is raised to bring the clasp V  $v$  above the point of the upper hook B. The end of the line, which is represented in broken lines, supposed to be coming from a loose coil, enters the outer end of the shaft D, passes through the hole  $a$ , and from thence to and through the tube  $b$  of the sweep C. Before the machine is set in operation, the end of the line should be hitched to the lower hook. The machine is started by lifting the pawl  $K^1$ , and allowing the ratchet wheel K to be driven by the spring  $q$  so far in the direction of arrow 1 as to bring the pin  $p$  in contact with the upper side of the arm 7 of the lever J, which stops the ratchet wheel, and leaves the pulley G engaged with the sweep shaft, which, with the sweep, then commences to rotate in the direction of arrow 3, and to lay the line round the hooks B  $B^1$ . The laying operation continues until the ratchet wheel K has been moved so far in the direction of arrow 2 as to cause pin  $m$  to raise arm 7 of lever J, to disengage slide  $i$  from pin  $k$  of pulley G, and lock the sweep shaft, and to throw forward the lower arm of the said lever to operate upon lever 19, and draw back latch 16 to let fall clasp rod  $u$ .

The pulley G is loose on the sweep shaft, and carries on one side pin  $k$ , which, during the laying, catches sliding piece  $i$  on cylinder I, which is secured to the shaft. The slide is acted upon by spring  $j$ , which is coiled within the cylinder to force it in the direction of arrow figure 3, and bring part 6 in contact with the pin. When the pulley is to be stopped, the sliding piece has to be thrown back to allow part 6 to clear pin  $k$ . This is done by means of pin  $m$  of ratchet wheel K striking arm 7. Wheel K is secured to shaft F, and is engaged by tooth  $n$  on sweep shaft D; and, by this tooth, is caused to move one tooth during each revolution of the sweep, till  $m$  lifts arm 7 so as to meet end 8 of sliding piece  $i$ ; after which, a slightly continued revolution of the cylinder causes the sliding piece to be thrown back to clear pin  $k$ .

The fall of the clasp rod beyond a certain point is prevented by the fixed jaw V of the clasp coming in contact with the stop 22, which then supports the clasp and rod. The clasp is arrested in the proper position to commence the woolding; and, just previously to the end of its fall, the pin *y* throws off the catch *w*, and allows wheel Q to engage with shaft P and set hooks B B<sup>1</sup> in motion.

Wheel Q is loose upon shaft P. The wheel is engaged with the shaft by means of a spring latch *r* pivoted at *s* to block S, which is secured to the shaft; point *u* of said latch catching one of two studs *t* on the lower side of wheel Q. Spring 10 holds the latch in operation. The disengagement of the wheel is effected by means of hook *w* pivoted to fixed bracket T, which catches the tail 9 of the latch, and holds its point clear of the pins *t*; but, during the woolding, the hook is kept clear of the latch, its tail being held by pin *y* attached to collar *z* on clasp-rod *u*.

The line passes under the clasp, which, with its rod, is raised as the woolding proceeds. The position of the sweep causes the woolding to be wound upwards, and the weight and resistance of the clasp, pressing upon the line, cause the coils to be regularly and closely laid. When the woolding has been performed to the desired height, the wheel Q is disengaged from shaft P by means of projection 35 on the side of the clasp rod, which projection, in passing catch *w*, moves it so as to catch the tail of latch *r*. The machine now stops. The clasp is opened by the attendant, and the clasp rod lifted high enough for the catch 16 to catch collar 17 and support it; and the line is taken from the hooks by the attendant, and secured at the termination of the woolding by a half hitch. The wound line or hank is then dropped through the hollow of the pivot L<sup>1</sup>, and held by the clasp. By raising the pawl K<sup>1</sup> the machine is again started.

The length of the hank can be varied by adjusting the brackets M M<sup>1</sup> at different distances apart, the wheels O O<sup>1</sup> being fitted to shaft P with feather and groove. The length of sweep is adjustable by means of slot 34 and central screw. V *v* and 17 are also variable, to adjust the length of woolding.

*Claim.*—1st. The sweep composed, as described, of an arm C attached to a hollow shaft D, and carrying a hollow tube *b*, which is caused by the revolution of the shaft to lay round the fixed hooks B B<sup>1</sup> a line, cord, twist, or other fabric of similar character, which is conducted through the shaft and the said tube, substantially as herein set forth.

2d. So arranging, applying, and operating the sweep and the hooks, around which it lays the line or other fabric, that the hooks shall remain stationary, in a suitable position to receive the line or fabric, while the sweep revolves around them; and that the hooks, after the operation of the sweep terminates, shall rotate upon axes in line with each other, to perform the woolding, as herein fully described.

3d. Giving the tube *b* of the sweep a motion endwise, simultaneously with its revolution, by any means substantially as described, for the purpose of laying the line or fabric evenly on the hooks, and preventing its being laid in heaps.

4th. The manner of disengaging the pulley G. or its equivalent, which drives the sweep shaft, in order to stop the sweep at the proper time and in the proper position, by means of the sliding piece *i*, the lever J, and the adjustable pin *m*, in the ratchet wheel K, or its equivalent, deriving motion from the sweep shaft, all operating substantially as herein described.

5th. The rod U arranged and operating substantially as described, for either or both of the purposes herein set forth, viz: 1st. To carry a clasp V *v*, which regulates the woolding. 2d. To carry fins, pins, or other projections 35 and *y*, to operate a catch *w*, or its equivalent, to cause the engagement and disengagement of the gearing which gives revolution to the hooks to perform the woolding.

6th. The application to the clasp of a catch lever 15, operating substantially as described, to hold the jaws open during the laying operation, and to be caused to liberate them by the falling of the clasp to allow them to close ready for the woolding operation.

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No. 12,845.—WILLIAM H. ZAHN, assignor to F. REUTER.—*Improvement in Plaiting and Twisting Cord*.—Patented May 8, 1855. (Plates, p. 60.)

The operation of this apparatus will be understood from the figures.

*Claim*.—The within described arrangement for driving the flyers, consisting of the circular rack *f* gearing, with their spur wheels *y y*; said rack being on a table B, which has a central pivot, through which the spindle C of the flyer frame passes, whereby the flyers are set in operation, whether the flyer frame or the table revolves, and are enabled to receive merely a rotary movement on their own axes for making twist, or such rotary movement, combined with a revolution round a common axis, for making cord, as herein fully set forth.

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No. 12,920.—HENRY PEARCE.—*Improvement in Cordage Machinery*.—Patented May 22, 1855. (Plates, p. 61.)

The collar *m* and washer *n*, underneath the loose spur-wheel *i*, act as a break or rubber to the said wheel by pressure from below, transmitted by the plunger *o* passing up within the column *b* from the weighted lever *p*.

Figure 2 represents a section through the column, drawn on an enlarged scale.

*Claim*.—The arrangement of a friction or rubbing collar, operated by a plunger passing upward within the supporting stem *b* and the weighted lever, as described, or equivalent devices, for regulating the degree of facility of rotation of the bobbin spindles.

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No. 13,564.—SAMUEL W. BROWN.—*Improvement in Machinery for Cleaning Cotton*.—Patented September 18, 1855. (Plates, p. 61.)

M is the dome or exhauster and N the grid, which prevents the cotton from being drawn off with the dirt. *b* is a dust-pipe which connects

with a cross-pipe Z, which contains a rapidly revolving fan for the purpose of drawing the dust from the cotton as it is driven along by the first beater E into the dome. R are several sets of secondary feed-rollers, supported by the arches N<sup>2</sup>, which revolve and conduct the cotton from the dome to the second beater F in several different places, so that this beater will strike and more thoroughly agitate the fibres of the cotton.

First. I *claim* my within described dome, having a rack or grid in the upper portion of it, under which the cotton is thrown by the first beater, in connexion with the fan in the exhaust-pipe leading from the top of the dome, for exhausting the dust from the cotton as it is thrown forwards by the first beater, essentially in the manner and for the purposes set forth.

Second. I claim the use and application of two or more sets of secondary feed-rolls, in connexion with the beaters, which rolls take the cotton from the dome and deliver it to the second beaters in several different places, so as to completely separate and agitate the cotton, to straighten and even the fibres, and free the dirt from it, essentially in the manner and for the purpose set forth.

No. 13,862.—ERASTUS B. BIGELOW.—*Improvement in Cutting Pile Fabrics*.—Patented December 4, 1855. (Plates, p. 61.)

*b* is the rotating cutter; *c*<sup>1</sup> the double-woven cloth which is to be divided; *d d* delivery rollers; *e e* take-up rollers for drawing the two fabrics apart, and carrying them forward as the cutting operation proceeds.

*Claim*.—The employment of a rotating cutter, in combination with take-up rollers, substantially in the manner and for the purpose set forth.

No. 13,970.—JOHN HEALEY, assignor to JAMES BISHOP.—*Improvement in Woven Fabrics*.—Patented December 18, 1855; in England, November 17, 1846. (Plates, p. 61.)

The nature of this improvement consists in placing the weft-threads, which cross from one selvage to the other, in a diagonal position, or at any angle more or less than a right angle, with the warp, making thereby an elastic fabric when stretched in a line of direction corresponding with the shortest diagonal of the meshes.

The warp runs in a direction parallel with A A or B B; the direction of the weft-threads is represented by *a c*. The inventor states that he is about to apply for letters patent for a loom adapted to weaving the fabric described above.

*Claim*.—The improvement in the woven fabric described, in which the weft is placed in a diagonal position to the warp.

No. 12,343.—JOHN H. BLOODGOOD.—*Improvement in Manufacturing Seamless Felt Goods*.—Patented February 6, 1855. (Plates, p. 61.)

A bat of felting material A A is formed in every respect as for making ordinary felt cloth, and is placed upon the machine called the felter between two linen or cotton sheets. Above or below these sheets is placed a pattern B B of considerable thickness, of the shape of the article required, (the fig. represents the pattern for a coat body,) reducing so much of the pattern as may be deemed necessary where a union corresponding to a seam is subsequently to be effected; so that in those places a proper margin may be left, which margin, together with all other parts of the bat not directly embraced within the limits of the pattern, being protected from the action of the elter, in consequence of the interposition of the pattern, will remain nearly unfelted and soft; whereas those parts which are covered by or rest upon the pattern, will receive the whole action of the hardening plate. The bat being thus prepared with soft unfelted margins, the perfect union of the several parts is effected by felting, as in the old process of forming hat bodies.

The inventor says: I *claim* the method of forming the various parts necessary to the production of seamless articles of felt, by the use of a movable or stationary pattern, in the manner and for the purposes described.

But I do not claim the manner of forming the bat, or of uniting the several parts; as both are old and well known processes.

No. 12,863.—WILLIAM H. HOWARD.—*Improvement in Condensers for Fibrous Materials*.—Patented May 15, 1855. (Plates, p. 61.)

The guide plates G serve to keep the sliver down in contact with such portion of the faces as is necessary to produce the desired degree of condensation. These plates are attached to a series of levers, which work on fixed fulcrums *f*, and are all connected by a bar R. The plates are bent to fit to the sides *b b'* of the discs C C'. When they are in contact with the slivers, their curved form tends to prevent the slivers rising between the discs, and causes them to work down till they find a free place to move in. By moving the bar R to the right or left, so as to give the plates a greater or less inclination, the tendency of the sliver to rise is increased or diminished, and the condensation regulated.

The spool F receives motion by friction from drum E. As the spool receives the slivers, it keeps rising in the vertical guides *g g* on the framing, until the spool journals leave the fixed part of said guides and come in contact with the upper part of levers *h h'*, which form movable continuations of the front part of said guides. These levers are hung loosely upon the shaft of drum E, the weight or bar N tending to keep them in an upright position, as shown in full lines in fig. 1. When the diameter of the spool has sufficiently increased, the journals lift the catches I, and the spool rolls down the drum E until it balances the bar N, when an empty spool is dropped into the fixed or lower part

of the guides *g*. The full spool is then raised by hand and held over the empty one, (which now revolves with the drum,) until the slivers lap around it, and then it may be removed.

*Claim.*—1st. The combination of the several parts hereinbefore described, for conducting and condensing the fibrous material from the doffer *D* of a carding engine to the spool, to wit: the two sectional rolls *D*<sup>1</sup> *L* working in contact with each other, and the upper one *D*<sup>1</sup> in contact with the doffer, for doffing and conducting the sliver from the doffer. The two series of convex discs *C* *C*<sup>1</sup> mounted upon shafts *S* *S*<sup>1</sup>, in front of and parallel to the said rolls, with the guide-plate *G* to govern the position of the slivers between the said discs, for twisting and condensing the slivers as they are conducted from the doffer to the spool, substantially as herein set forth.

2d. The manner of constructing the upper parts of the guides *g* *g* of the journals of spool *F*, to wit: making the outside portion thereof form parts of levers *h* *h*<sup>1</sup>, whose operation is controlled by a bar or weight *N* and a catch *I*, substantially in the manner herein described for the purpose set forth.

No. 13,578.—RICHARD KITSON.—*Improvement in Machinery for Picking Fibrous Materials.*—Patented September 18, 1855. (Plates, p. 61.)

This invention refers to securing the teeth in the cylinders of picking machines.

*ee* are the locking pieces referred to in the claim.

I do not now claim, broadly, the application of a fan to the cylinder in any manner; as one method of applying a fan is embraced in my patent of October 31, 1854.

Without claiming here the use of a notched plate for securing the teeth to the cylinder, I *claim* casting or forming the notched plate with locking pieces, for the purpose of entering between the prongs *ff* of the teeth, into the grooves which are formed in the cylinder to receive the teeth, and fitting down to the bottom parts or crotches *g* of the teeth, and thus securing them in place.

No. 13,650.—JULIUS A. JILLSON and HENRY WHINFIELD.—*Improvement in Apparatus for Washing and Bleaching Fibrous and Textile Substances.*—Patented October 9, 1855. (Plates, p. 61.)

The liquid is placed in cylinder *A*, and the cloths in cylinder *E*, the bottom of which consists of a strainer *F*; *D* is a similar strainer. By working the force pump *I*, the cleansing liquid is forced and rotated through the cloths, and the latter are thereby thoroughly cleaned.

Vessel *T* is attached (by pipes provided with stop-cocks) to the pump, for the purpose of generating and passing (by opening said stop-cocks) into the cylinder *A* and *E* bleaching or disinfecting gases.

*Claim.*—Combining with a washing, extracting, or receiving chamber, the double-acting force pump and the disinfecting or bleaching vessel, operating substantially as and for the puposes set forth.

No. 13,636.—JEAN BLANC.—*Improvement in Preparing Vegetable Fibre*.—Patented October 9, 1855.

The object of this improvement is to extract the fibre from the woody substance of the plants (to be used in the manufacture of cloth, thread, rope, and paper) without injuring the fibre as to its strength or beauty.

The inventor says: I do not claim burying the plants in either wet sand or mud, as described in the India process, found in the Agricultural Reports of the Patent Office for 1854, page 174.

Nor do I claim simply rotting the plants on end, with the butts down, as described in the Southern Cultivator.

But I *claim* the staking of the plants, butts down, in a pit dug for said purpose, and surrounding them with dry leaves or straw, with earth thrown around the same, thereby enclosing them entirely on all sides, leaving the top open and uncovered, as fully set forth.

No. 13,380.—LEANDER W. BOYNTON.—*Improvement in Machines for preparing Flock*.—Patented August 7, 1855. (Plates, p. 61.)

This improvement consists in fitting two or more brushes under the screen, and giving them both a rotary and a transverse reciprocating motion, to brush off all the particles of flock which would otherwise adhere to the under side of the screen to prevent clogging, and so that the flock will be distributed over the web with entire uniformity.

*Claim*.—The combination of the screen *a* with the brush or brushes, as A and B, when the brush or brushes have both a rotary and reciprocating motion, and the whole is constructed, combined, and made to operate, substantially as described.

No. 12,132.—ASA P. KEITH.—*Improvement in Cotton Gins*.—Patented January 2, 1855. (Plates, p. 62.)

In addition to the openings through the centre of the brush heads, as previously patented, the inventor arranges another circular opening *c* farther out towards the circumference of each head, by means of a slanting cut through the head, having its circumference on the inside of the head larger than on the outside; this opening, like the central opening, being intersected by the arms *d* for the support of the outer rim. This slanting opening is to turn the current of air, which is drawn in by the rotation of the brush, outward between the lags near their ends next to the ceilings of the chamber; and in order to turn it still more, and regulate its exit through the lags forming the surface of the brush, there is placed a flange *E* on the inside of the brush head opposite the opening *c*. By these means the cotton is to be discharged cleanly from the ends of the brush into the lint room, and not permitted to choke the brush nor be thrown down on the floor in front of the mote board.

*Claim*.—The slanting circular openings through the brush heads, with the guide flanches on the inside, substantially as described.

No. 12,376.—HENRY CLARK.—*Improvement in Cotton Gins.*—Patented February 13, 1855. (Plates, p. 62.)

The rollers D D C are arranged together as near as possible without touching each other, in contact, however, with the friction roller E and the ginning roller B. As the axles of B and E are geared together, and as the rollers D D C are in contact with the rollers B and E, they will all revolve together. The rollers B and C seize the fibre, while the comb F opens the cotton, and the rollers force the seed back and out of the way, while the cotton passes between the rollers B and E, and, with the aid of the stripping rollers D D, is thrown back on a board prepared to receive it.

The inventor says: I do not claim simply rollers for ginning cotton; nor do I claim the spiral grooved roller for that purpose, as it is contemplated to use the large roller without any groove; nor do I claim the comb simply.

But I *claim* the combination of a large ginning roller, either smooth or grooved, with a very small one, the latter driven and supported, as described, by the friction rollers and the large ginning roller, together with one or more stripping rollers and comb, for the purpose of removing cotton seed from the fibre, substantially as arranged and described.

No. 12,635.—JAMES B. MELL.—*Improvement in Cotton Gins.*—Patented April 3, 1855. (Plates, p. 62.)

The cotton to be cleaned is placed in throat M, and the roller B carries it around upon card roller F, the teeth *a* inserting themselves in the mass of the cotton and shaking and separating it as it is raised to F. The card teeth on F raise it until it comes in contact with the brushes on G. The cotton is spread over the whole length of roller F; but the seed and dirt, the inventor states, will not enter within the card teeth, but are thrown on the outside of the card and exposed to the downward stroke of the brushes on G. The dirt and seed are driven downwards to the inclined plate J, over which they pass and meet the cotton passing through throat M. This cotton being shaken by the action of B in raising it, all the seed and dirt, not tenaciously adhering to it, pass through it.

The inventor says: I am aware that card clothing has been used with a rotary brush in a cotton gin; and therefore, I do not claim them separately or combined.

I *claim* the combination of the beater B, card cylinder F, brushes *g* and H, and plate J, when arranged substantially in the manner described and set forth.

No. 12,894.—LEONARD CAMPBELL, assignor to L. CAMPBELL and THOS. W. BROWN.—*Improvement in Cotton Gins.*—Patented May 22, 1855. (Plates, p. 62.)

Cylinder F picks the cotton from saws *a*. The cotton is carried around on said cylinder, and taken off by cylinder E. The ginned



cotton is discharged from between cylinder E and concave brush bar I. The mote board J allows the motes to pass over the plane *e*, while the plane *d* prevents particles of cotton, which are specifically lighter, and consequently have less momentum, from passing under the plane *e*.

*Claim.*—1st. The combination of the two brush cylinders E F and brush bar I, arranged substantially as herein shown and described.

2d. The employment or use of the mote board J, when constructed of two planes *d e*, placed at such angles, or in such a relative position to each other, as herein shown and described.

No. 13,131.—R. A. L. McCURDY.—*Improvement in Cotton Gins.*—Patented June 26, 1855. (Plates, p. 62.)

J is a screen cylinder with a spiral flanged cylinder I in its centre. The cotton being put into the gin, the saws separate the hulls from the cotton; and as there is not room for them to pass out of the gin with the seed, they are naturally thrown to the centre of the box, when the screen J receives them; the flanged cylinder I operates on and conveys them out at the end of the box. The seeds being heavy, and meeting with no obstruction, pass from the gin between the saws in the common way.

*Claim.*—The cylinder screen for the reception of the boll, hulls, &c., and the continued spiral flanged shaft, arranged inside of said cylinder screen, as explained, for the purpose of working out said boll, hulls, &c., as explained, or otherwise substantially the same, and that will produce the intended effect.

No. 13,441.—JOHN SIMPSON.—*Improvement in Cotton Gins.*—Patented August 14, 1855. (Plates, p. 62.)

The nature of this invention will be understood from the claim and engravings.

*Claim.*—Making the alternate saws of a greater diameter than the intermediate saws, in order that no two adjacent ones may seize the same fibres, and thereby break them; but at the same time to gin as completely and rapidly as if the saws were all of the same diameter. Also, arranging the brushes, which sweep the smaller saws upon alternate wings, projecting out from the centre as much farther than the intermediate wings which bear the brushes for sweeping the larger saws, as said saws project beyond the others, for the purpose of rendering the brushes of a uniform and suitable length.

Also, arranging the mote-board I so as to slide backward or forward, for regulating the strength and direction of the blast, and properly separating the motes from the cotton; and also to be used as a lid to entirely close said space, when the gin is not in use, substantially in the manner set forth.

No. 13,484.—A. D. BROWN, assignor to MARGARET L. BROWN.—*Improvement in Cotton-Gin Saws*.—Patented August 28, 1855. (Plates, p. 62.)

The teeth of the saws are arranged in a series of curves eccentric to their axes, or, what is equivalent, in a series of tangential lines. By this means, with a proper arrangement of the saws relatively to each other, it is rendered impossible for any two saws to catch the same fibres across a rib and thereby cut or break it.

The inventor says: I am aware that cotton-gin saws have previously been constructed in segments of circles; but I regard that as a totally different arrangement, as the teeth are arranged in the same circle; and I do not claim any such arrangement.

But I *claim*, arranging the teeth in a series of curves *b b* eccentric to the axis of the saws, or what is equivalent, in a series of tangential lines, substantially as set forth.

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No. 13,641.—H. H. FULTZ.—*Improvement in Cotton Gins*.—Patented October 9, 1855. (Plates, p. 62.)

The object of constantly presenting a fresh surface of cotton to the action of the saws as it passes along, is to prevent the staple or fibres of the cotton from being cut by the saws, and to cause the cotton to be more perfectly ginned.

*Claim*.—Giving the cotton to be ginned, within the feed-box and directly over the saws *B*, a spiral or twisting motion by means of the plates *c*, or an equivalent device, so that the cotton will pass from one end of the feed-box to the other, and have a fresh surface presented successively to the action of the saws as it passes over them, for the purpose as shown and described.

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No. 13,815.—LEWIS S. CHICHESTER.—*Improvement in Cotton Gins*.—Patented November 20, 1855. (Plates, p. 62.)

*b* is the table on which are laid the pods of cotton to be ginned. Above the leather-faced roller *c* is placed the metallic roller *g*, the journals of which are mounted in swinging frame *h*, which latter is pivoted at *i*. By throwing forward this frame, (see position of frame represented in dotted lines,) the peripheries of the two rollers will be separated.

In front of the upper roller is the guard plate *j* with its edge nearly touching the periphery of roller *c*, and also a little distant from the upper roller when thrown forward. The seed is discharged at *l* between the table and the plate. A brush *m*, as long as the rollers, is attached by arms *n* to the upper bar of the swinging frame, and its face is so placed that when the frame is thrown back it is in contact with the periphery of both rollers.

I *claim*, giving to one or both of the rollers of a roller-gin the separating motion, substantially such as described, to separate the rollers for discharging the seed after the fibres have been separated as set forth.

I also *claim*, the guard and discharge plate, substantially such as

described, in combination with the two rollers of a roller-gin, having the separating motion, substantially as described and for the purpose set forth.

And I also *claim*, the cleaning and collecting brush, arranged substantially as described, in combination with the ginning rollers, substantially as and for the purpose set forth.

No. 13,898.—MAJOR B. CLARKE.—*Improvement in Machinery for Opening and Feeding Cotton to the Gin.*—Patented December 4, 1855. (Plates, p. 62.)

The teeth of the comb *c g* project from the comb-back *g* and from the bottom of hopper *f*, for the matted cotton to rest upon. Ratchet-teeth are placed on one end of comb-back *g*, which are acted upon by click *i*, and by means of which the comb-teeth can be retained in any desired position. The teeth of the feeding roller *a* pass up beneath the teeth of the comb *c g*; consequently, when said comb-teeth are depressed, the teeth of the feeding roller will have free access to the cotton, and will carry large quantities under the bottom of gate *b*, to be operated by the fanning-beater *e* in rear of the gate. By elevating the gate, and depressing the teeth *c*, the teeth of roller *a* will be able to seize and carry forward into the machine a sufficient quantity of cotton, however damp it may be, and without danger of clogging up the feeding apparatus.

*Claim.*—The arrangement of the toothed feeding roller *a*, the adjustable gate *b*, and the adjustable comb *c g* with each other, substantially in the manner and for the purpose set forth.

No. 13,981.—ISAAC DAVIS.—*Improvement in Machinery for Whipping Hair.*—Patented December 25, 1855. (Plates, p. 63.)

When the hair enters the cylinder at *i*, it is instantly struck by the flexible rods *a*, revolving with shaft *A*, and thrown violently among the stationary rods *b*. If a lump be too large to pass between the rods, the latter, being elastic, will yield to allow it to pass; and it will be carried round by a rapid succession of blows between the rods, at the same time that its gravity and the current of air from above will impel it downwards, until finally it is thoroughly whipped and driven out at *k*. As the hair is entangled and impeded in its downward course by the rods, it cannot descend as rapidly as the dust; hence the latter is effectually separated from the former. The shaft and rods, rapidly revolving, act like a fan and draw the air in at *i*. The register *j*, at the bottom, may be opened to admit air; and if the discharge of air by the fan through aperture *k* is supplied in part from the bottom, it is obvious that less will be drawn in at the top. Thus hair can be caused to be fed in more or less rapidly.

*Claim.*—A combination of a series of long, slender, and elastic revolving rods, with a similar series of stationary rods, arranged and operating within a cylinder as set forth, for the purpose of whipping hair

Also, in combination with the foregoing, a register in the bottom perforated head of the cylinder, for the purpose of regulating the strength of the downward current in the cylinder, and insuring a due admixture of air with the whipped hair as it leaves the machine.

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No. 12,321.—SIDNEY S. MIDDLEBROOK, JAMES B. BLAKSLEE, and CHARLES F. BLAKSLEE.—*Improvement in Machinery for Felting Hat Bodies*.—Patented January 30, 1855. (Plates, p. 63.)

*Claim*.—The employment or use of the two beds or plates E J corrugated on their inner surfaces, substantially as shown, the upper bed or plate E having an up-and-down and also a lateral vibratory movement given it by cams C, or their equivalents, and the lower bed J being elastic or yielding, for the purpose of subjecting hat bodies to a rolling motion under requisite pressure, and thereby thoroughly felting the same, as described.

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No. 12,353.—S. E. PETTEE.—*Improvement in Pressing Hats and Bonnets*.—Patented February 6, 1855. (Plates, p. 63.)

The inventor says: I do not claim the pressing of hats by machinery, nor the use of heated materials, or damp cloth, as such.

But I *claim*, the combination of the curved heated bed-plate A with the roller H, for the purpose of pressing hats and bonnets, whereby I am enabled to use a rolling pressure, in contradistinction from a sliding pressure given by smooth irons, or any other substantially the same.

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No. 12,386.—WILLIAM FUZZARD.—*Improvement in Machinery for Felting Hat Bodies*.—Patented February 13, 1855. (Plates, p. 63.)

The roller C<sup>1</sup> is first moved a suitable distance from the roller C by operating the screw E, and the hat bodies to be felted are rolled up by hand and placed in the fold at the lower part of the endless apron G. Roller C<sup>1</sup> is then moved near roller C, a rotary reciprocating motion is given to the drum F, and the hat bodies receive a similar motion within the apron and underneath the rollers; the requisite pressure is given the hat bodies against the rollers by depressing the outer end of the swinging frame B, which has its fulcrum in *a*.

The inventor says: I do not claim the corrugated rollers C C<sup>1</sup> separately; for they have been previously used, although differently arranged from those described.

But I *claim*, the employment or use of the corrugated rollers C C<sup>1</sup>, placed in a swinging-frame B, in combination with the endless apron G, the above parts constructed, arranged, and operating in the manner and for the purposes as herein shown and described.

No. 13,005.—LANSING E. HOPKINS.—*Improvement in the Process of Manufacturing Hats*.—Patented June 5, 1855.

The inventor says in his specification :

The fur having been cleaned by blowing in the usual manner, I proceed to form a hat or hat body, or what in some cases is termed a shell. In this process I arrange a solid-surfaced fixed cone upon its stationary table, and around it an annular ring or revolving table closely fitting the same, to avoid escape of steam; and upon this revolving ring or table is a cone perfectly solid upon its conic surface, but having its base upon, so that it may set over and cover, the stationary steam cone, (which is the inner one,) and is fixed to the table. The outer cone is perfectly smooth upon its outward or conic surface, is not perforated, and depends upon the wetted surface to retain the fur upon it when it is revolving. I convey a body of hot steam into the interior of the stationary cone; this impinges against the cone so as to heat it, and thus the space between it and the revolving cone, which causes the fur to dry to a sufficient degree to harden it, so that it may be handled and removed from the smooth cone without the use of any inlayer, and also dispense with the necessity of dipping in hot water for the purpose of hardening, so that it may be handled. Having set the revolving cone in motion, I apply a jet of steam to impinge against the outer surface and dampen it. This I effect by means of pipes so arranged as to cause every part of the surface of the cone to receive a like amount of pressure and dampness from the steam.

In the common way of conveying in delivering fur to the cone, where hats are formed by machines, I deliver the fur to the solid cone, except that the mouth of the delivering chamber is to be regulated so as to deliver the fur in greater or less quantities on given points or parts of the cone, at the will of the operator; so that the fur may be deposited, as in the operation of feeding by hand in case of hand-made hats, more at the bottom or brim, and less at the top of the cone or tip of the hat. The pipes of steam are attached to the adjustable wings of the mouth-piece, so as to move with and be regulated by them, and are of peculiar construction adapted for the purpose.

Part 2d. This part of my newly invented process of making hat bodies, relates to the bringing of the hat down to the desired size, and is called sizing or planking hat bodies. Although several machines have been attempted for the purpose, nothing as yet has proved fully complete, with sufficient economy to induce their general introduction.

This machine is a semi-circular concave, having a beater with a vibrating motion, whose operating face is corrugated, although it may be used plain; it has, besides, a continuous and endless apron, peculiar in its construction, and this runs over a friction roller which causes it to continually advance in the desired direction. At the bottom of the concave box or receiver I place a small quantity of water, just sufficient to immerge the bags of hats; I then introduce at the bottom, and underneath the body of water, a jet of steam, which is to heat the water to boiling. I shall now take a number of hats, from one to twenty-four dozen, be the same more or less; these I introduce into bags properly confined, so that they may be readily withdrawn from the

water, there being perhaps one or two dozen in a bag. These bags I place within the revolving apron, and between the corrugated beater and concave of the box within the boiling water. I then set the beater in motion, jointly with the roller carrying the apron, when the back and forward motion of the beater beats up the bag of hats, and the onward motion of the apron keeps the several bags in continuous revolution, and the beater is constantly and rapidly knocking them up against the side of the concave box. I next take out the bag of hats and croze them in the same manner as hand and machine formed hats usually are, that is, fold each one where it is too much full, and expose them where fulling is most required; and this is repeated as often as is necessary, until the hat is brought into the desired size, when it is forwarded to the next part of the process presently to be described. In this, I begin by light blows upon the bags of hats, and increase the force and motion of the beater as the state of hardness requires, until the operation has completed the sizing of the hats.

Part 3d. This relates to the sticking, scalding, and beating up of hats. After the hat has been sized, as herein before stated, it is dried; when it is shaved or singed in the usual manner by hand. If it is a felt hat, is then stiffened, formed into its proper shape, and dyed. If it is to be a napped hat, it is to be treated in the like manner, when it is again immersed in hot water; this will cause the fur to adhere to it. I now place the body upon a wooden or other solid cone, and give it a revolving motion. (Next a chamber for the delivery of fur, having its regulated mouth and steam jet, as described in the forming machine in the first part of this specification, is brought into use.) The steam is then let upon the body, and the fur, prepared in the usual manner, is thrown in upon the cone, where it adheres, until the quantity of nap is put upon the hat which is desired. The hats will have to be turned as in the hand process, for the purpose of napping the under side of the brim.

I now proceed to my new process of nesting up, which is as follows: I make a soft bag or cone of sponge or other suitable material, and upon it place a flannel cloth, upon the top of which I place a hat upon which the nap has been stuck, and upon this another flannel cloth, and then another hat, and so on, until I get the desired number of hats packed or nested; this may be more or less, from one dozen to twenty dozen in a nest. They are now ready for scalding in, which is performed as follows, viz: A cylinder of wire cloth, or perforated metal, is provided, and is fixed so that one of its ends can be removed, so as to introduce the cylinder or nest of hats; this perforated cylinder is arranged so as to have journals upon each of its ends or heads, upon which it may revolve. The hats thus nested are then put into the cylinder, the last being considerably larger in its interior than the nest is on its exterior, so that the rolling of the metal cylinder will cause the nest of the hats to roll in an opposite direction. I next provide a steam-tight box, having the necessary journal boxes, and at or near its bottom introduce a jet of steam to the desired heat and pressure. I also have a stop-cock near the bottom of this box, by which any water which will become condensed may be drawn off; as contact with water might tend to wash the nap from the body. All this being provided, I give to the perforated cylinder a rocking motion to and fro, while in the confined steam-box, and this is

to be continued during the option of the operator, and until the nap is thoroughly scalded in.

My plan of "beating up naps" is much like the hand process of accomplishing the same result. I provide a table or plank, as it is termed by the trade, the plank part resting upon a bed-piece, and having a water-tight box around it, something larger than the plank itself; to this bed I give a slow reciprocating motion to the extent of about its own length, so that it will move to and fro under the beaters. The beaters consist of a row of thin sticks placed in a line, in a rocking shaft, so that they will beat down upon the hats or table at each rock of the shaft; that is, they rise and fall as the shaft rocks. A quantity of hot water is placed in the box, just sufficient to float over the top of the plank, when in this and upon the plank are placed the napped hats. A jet of steam is then let into the water to keep it hot; a stop-cock being also provided by which to draw off the surplus water. All this being arranged, the beater is put in motion, beating down upon the table, and meanwhile the plank, having been covered with hats, is also put in motion backwards and forwards; thus the hats are continually being beat during the option of the operator, until the operation is complete, and the hats are sufficiently cleaned.

I do not claim the principle of manipulating while under water for the purpose of working in the nap, or for the purpose of beating up the nap, as referred to, and before patented.

But I *claim*, a complete hat body by means of the manipulations and process described, including the forming, felting, or sizing, and the sticking, scalding in, and beating up of naps, without regard to the peculiar machinery which may be used to produce the combined result of beating, or otherwise manipulating in hot water, for the purpose of manufacturing a hat by a complete and continuous range of mechanical operations, as a substitute for the dipping and rubbing on a plank by hand, as described.

No. 13,013.—ANDREW RANKIN.—*Improvement in the Manufacture of Hats*.—Patented June 5, 1855. (Plates, p. 63.)

The scalding chest *c* contains a cradle *c*<sup>1</sup>, which latter runs on wheels on the bottom of the said chest. The cradle is provided with a set of rollers *d*, around each of which rollers two hat bodies are rolled and fastened; the envelopements rest on the bottom of the chest, and are rolled on it as the cradle moves to and fro. Above the cradle, and resting on the rolls of hat bodies, the board *f* is placed, which is to operate similarly to the human hand. This board *f* is suspended on the road (rider) *e*, which is allowed to slide up and down on rods *h h*, by which means the rider is always kept parallel with the bottom of the chest, and the board or hand *f* (being free to vibrate horizontally) is constantly kept level. The hand is worked by a vertical lever *i*, the fulcrum pin *i*<sup>1</sup> of which (inserted in one of the several fulcrum holes) slides freely between guide posts *k k*, so as to follow the horizontal motion of the hand, and permit it to bear its whole weight upon the rolls of hat bodies. A pitman *l* serves to vibrate the lever. To raise the hats out of the water in the chest, the cradle is attached to the hand by four cords;

and by means of a fall attached to the upper end of lever *i*, the whole can be lifted above the water into the position represented in the engraving.

*Claim.*—The employment of the rider for controlling the action of the hand, constructed and arranged substantially as specified, and in combination therewith the upright lever with movable fulcrum for operating the same.

Also, uniting the hand *f* and cradle by cords, whereby the hats are readily raised out of water to be handled, and the cradle is held in place to receive a new set of rollers.

No. 13,304.—PHINEAS EMMONS.—*Improvement in Machines for Sizing Hat Bodies.*—Patented July 24, 1855. (Plates, p. 63.)

The hat bodies rolled up and wetted (by dipping them into the first compartment of water-box A) are placed at the edge of throat *c* on partition B, and are rolled against the face of the revolving disc D, which immediately carries it around with it and through the water and out at the opposite side, where it is deposited on the table M comparatively dry, in consequence of the pressure applied to the hat bodies between the disc face and the face of the partition B, by means of a weighted lever H acting against the collar K of the disc shaft.

*Claim.*—The water-box, having the partition or graduated pressure board therein, in combination with the vertical disc wheel, having a ribbed or corrugated face and self-adjusting weighted levers, the same being made and combined substantially as set forth.

No. 13,613.—PETER ARNESEN, JORGEN PEDERSON, and HANS REES.—*Improvement in Preparing Materials for Hat Bodies.*—Patented October 2, 1855. (Plates, p. 63.)

The delivering boards *k* (which form the spaces in feed box B, for the reception of the various kinds of fur or other materials used for manufacturing hat bodies) can be set at different distances so as to proportion properly the relative quantities of the materials. The serrated plate and rollers *e* C and D serve to loosen the fibres of the materials, and to draw the same from the feed-box into the draught or blast passage, at the same time preventing the admission of large foreign substances into the machine. Figure 1 represents a vertical longitudinal, and figure 2 a vertical cross section.

The inventors say: We do not claim the shell F and conical head *g* separately; nor do we claim the box H separately; for they have been previously used.

We *claim*, first. The combination with a feed-box, having adjustable partitions therein, so that the material to be used may be proportioned in quantity in its different apartments; the machinery for taking it therefrom, and thoroughly mixing it in said proportions, preparatory to its being used in hat bodies, as described.

Second. We claim, the combination of the two cylinders C D and plate *e*, constructed as shown, viz: The cylinder C, having serrated



plates *l* attached to its periphery, and the plate *e* provided with a serrated edge, for the purpose set forth.

Third. We claim, the combination of the box *H* with the endless apron *J*; the shell *F* and conical head *G*, with the wings or blades *g* at its end, whereby the materials are thoroughly mixed and discharged from the machine in a loose and light state, and may be delivered, without handling, to the next machine.

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No. 13,614.—PETER ARNISON, JORGEN PEDERSON, and HANS REES.—*Improvement in Machine for Manufacturing Hat Bodies*.—Patented October 2, 1855. (Plates, p. 64.)

By adjusting the plate *b*, the feed of the material may be regulated. The cylinder *D* takes the material from feed-cylinder *C*, and throws it upon the horizontal part of apron *F*, which latter carries it to the rollers *g*, between which it passes on to cylinder *h*, which latter carries it around upon the next apron *H*, and so on through a number of rollers *g* *h* and aprons *H* (the engraving represents only one set of them). The material, in being carried around by rollers *h*, is sufficiently loosened to allow the hair, which is mixed with the fur, to fall upon the shaking screens *I*, (the hair being heavier than the fur,) and through the screens into boxes *I*; while any good fur which may have escaped the rollers *h* will (in consequence of its light loose state) not pass through the screen, but will pass down between the boxes *I* upon apron *E*, which carries it up between the two inner sides of aprons *E* *F*, and deposits it again upon the horizontal portion of apron *F*. The cylinder *z* takes the material and throws it into the conductors *X* *X*, and a blast throws the material on the hat formers *R*. The outer ends of the conductors can be inclined by adjusting frames *Y*, so as to correspond with the obliquity of the faces of the formers; and the mouth of the conductor can be contracted or enlarged at any point by set-screws *g*<sup>1</sup>, so as to throw more or less fur on certain parts of the formers.

The inventors say: We do not claim the boxes *I*, screens *I*, cylinders *h*, and rollers *g*, for they have been previously used; neither do we claim the formers *R*, nor the fans *P*, for they also have been used.

But we claim, first. The combination of the endless aprons *E* *F*, cylinders *C* *D*, and plate *b*, and brush cylinder *G*, arranged substantially as shown, for the purpose of feeding the material in a proper state to the series of cylinders *h* and the formers *R*.

Second. We claim, the weighing apparatus formed of the levers *t* *t*, ring *v*, and weight *z*, or constructed in any other way when the weighing apparatus is so arranged, that the former, while in motion, and the fur is being thrown upon it, may rest upon the weighing apparatus, and the former, exhaust, and fur, by their weight, counterbalance or raise the weight *Z*, when the proper quantity of fur has been thrown upon the former to form a hat body.

Third. We claim, the guide or conductors *X* *X*, constructed of India rubber, and provided with the adjustable frames *Y* *Y* at their outer ends; said frames being provided with set-screws *g*<sup>1</sup>, and arranged substantially as described for the purposes set forth.

Fourth. We claim, the employment or use of the slide or cut-off W, and the movable bed-piece or platform T, operated automatically as shown, or in any equivalent way, for the purpose of regulating the blast and stopping the supply of fur to the formers, as described.

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No. 13,698.—WM. W. CUMBERLAND.—*Improvement in Felting Hat Bodies*.—Patented October 23, 1855. (Plates, p. 64.)

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I *claim*, first. The arrangement and combination, in the manner substantially as set forth, of the hollow cone F, and solid cone G placed within it; the large ends of said cones being uppermost, having a wedging space between them of a proper size and angle, whereby the hat body, placed between them in the wedging space, will tend to tighten itself by its own weight in the space as it is rolled between the cones, as fully set forth.

Second. The combination and arrangement, in the manner substantially as described, of the reciprocating yielding roller frames L L with the table B, one of them having such a motion around the shaft D as to croze or change the position of the hat body by the friction of the rollers upon the hat body upon one side, and the friction of the hat body on the table on the other side.

Third. The combination of the weights K K, the roller frames L L, levers I I and J J, and the points *j j* attached to the cone F for the purpose of lifting the weight of the cone F, and thus diminishing the friction of it upon the collar of the shaft D, on which it rests below.

Fourth. I do not claim felting hat bodies by means of rubbing surfaces carrying a roll between them, nor by means of an elastic cone carrying a roll.

But I claim as my invention, partially felting hat bodies, enclosed, in their more tender state, in a hollow elastic cone of vulcanized India rubber, or other suitable material, lined with cloth; the larger and uppermost, in which the hat body is placed in an open conical form, corresponding to that of the cone by means of a process of bending or crimping, produced by the revolution of the elastic cone between two surfaces at a less distance from each other than the diameter of the cone, but not so near to each other as to cause the sides of the hat body within it to rub against each other, or the hat body to form itself into a roll.

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No. 13,963.—ISAAC SEARLES.—*Improvement in Felting Hat Bodies*.—Patented December 18, 1855. (Plates, p. 64.)

Fig. 2 represents a bottom view of one of the planking tables D, two of which are shown in fig. 1. C is a cone covered with a woollen pad. The cone is first covered with a body and then a cloth, then another body and another cloth, and so forth, and is finally wrapped up in a proper covering. The cone, with its contents, is then placed into the tub, as represented in fig. 1. Water and steam are then admitted, and the bed B revolved, when the whole circumference of the cone will be

brought into contact with the grooved surface of B. The bodies are then taken off the cone, rolled up, and placed under the planking tables D, a sufficient number of times to thoroughly finish the operation of planking and sizing.

The inventor says: I do not claim the construction of a wooden cone, or of a set of planking tables having their lower faces grooved separately; nor yet the construction of a horizontal revolving bed inside of a tube.

I claim, the combination of the circular revolving bed B, with one or more planking tables, and one or more cones, constructed and operating substantially as described.

No. 12,456.—D. W. HUGHES.—*Improvement in Hemp Brakes*.—Patented February 27, 1855. (Plates, p. 64.)

The unbroken material is placed, while breaker C is drawn back (breaker C being reciprocated by a pitman L) across the blunt edges of breakers B B, which are brought closer together or farther apart (see dotted lines in fig. 2) by means of treadle J and cord G, (the operation of which parts is apparent from the engraving,) according as the material is finer or coarser. The action of C, by driving the material against and between B B, cracks and breaks up the wood. As the operation progresses, the operator gradually presses down the treadle to make B B approach each other; and as the fibre is divested of woody matter, it is allowed to be driven by breaker C further in between B B. When the operation is finished, the operator raises his foot from the treadle, and the springs F throw apart the breakers B B.

*Claim*.—Arranging and applying the breakers B B so that they may be brought, while the machine is in operation, to the proper distance apart, to suit the nature of the material to be operated upon, and may be caused to approach each other or nearer to the line of operation of their corresponding breaker C, as the operation progresses, substantially as set forth.

No. 12,472.—GEORGE D. ALLEN.—*Improvement in Machines for Cleaning Sisal Hemp and Stripping Seed from Broom Corn*.—Patented March 6, 1855. (Plates, p. 65.)

The lever M being depressed by the foot of the operator, so as to allow the prongs to spring open, the leaves are inserted between the prongs. The foot then being raised, the weight O and levers G G close the prongs upon the leaves whilst they are drawn through, when the lever may again be depressed and the operation repeated. To remove the seed from broom-corn, the operator seizes the butt ends, and inserts the brush ends between the prongs, and draws it through, so as to pull off the seed.

*Claim*.—The combination of the prongs C, arranged substantially as described, with the spring-levers G G, or their equivalents, constructed and operated substantially in the manner and for the purpose set forth.

No. 12,896.—ROBERT CUSHMAN.—*Improvement in the Stop-motion of Knitting Machines*.—Patented May 22, 1855. (Plates, p. 65.)

The pinion L, which (gearing into L<sup>1</sup>) revolves the needle disc D, is fast on shaft L<sup>2</sup>, to the outer end of which is fastened the toothed clutch N. The corresponding clutch N<sup>1</sup> is attached to the driving pulley O, which revolves freely on the shaft when the clutches are out of gear. The fork a, at the end of traversing bar P, serves to set the clutches into or out of gear, which can be done by means of hand-lever Q. The bar being left free to the action of spring R, the clutches will be separated, and the interior portion S<sup>1</sup> of the friction clutch S<sup>1</sup> S (which is attached to fork a) will be forced into the part S, which is fast on shaft L<sup>2</sup>, and the machine will be stopped instantly. An upright rock-shaft b, which has its bearing in standard U, has on its under end an arm c, which (when the clutches N N<sup>1</sup> are in contact) catches into notch d in the end of bar P, and is held there (by means of spring e) while the machine is in motion. The lever f is fitted to vibrate freely in the upper end of rock-shaft b, and is provided at one end with a plate h, which rests upon the ends of levers i i<sup>1</sup> j, so as to be raised by either of them and carry the lever f between the teeth of gear L, and turn the rock-shaft b, so as to release arm c from the notch, and allow spring R to act and stop the machine.

If the fabric is imperfect, or one or more stitches are dropped, the finger W catches into the fabric and is moved by it, so as to turn shaft V<sup>2</sup> and vibrate arm W<sup>1</sup>, thereby releasing lever j, and raising lever f, and thus stopping the machine, as above described. The post x supports the bars l l and n n, between which bars the yarn passes, as it enters the machine, under the hooks on the outer ends of the levers i and i<sup>1</sup>, so as to hold them up, so long as the yarn runs in properly; but if one of the yarns breaks, so as to let the hook and lever fall, the opposite end of the lever raises lever f, and the machine is stopped, as above described.

The inventor says: I do *claim*, 1st. The finger W, placed in contact with, and resting against, the fabric, so arranged that when the fabric is too imperfect to support the finger W, it will vibrate and stop the machine, substantially in the manner described.

2d. I am aware that an apparatus has been applied to knitting machines to throw off or release the driving power, when the yarn supplied to the machine broke or run out, so as to allow the machine to stop. Therefore, I do not claim, broadly, the application of a stop-motion for that purpose, when used without a friction or other clutch, to stop the machine instantly when the driving power is released; but I do *claim* the lever f, actuated by the levers i and i<sup>1</sup>, in combination with the rock-shaft b, and the friction clutch S and S<sup>1</sup>, when arranged and operated substantially in the manner described, so that the instant the thread, or one of the threads, breaks, the motion of the machine is arrested.

No. 12,933.—JONAS B. AIKEN, assignor to JONAS B. AIKEN and HER-  
RICK AIKEN.—*Improvement in Knitting Machines*.—Patented May 22,  
1855. (Plates, p. 65.)

This improvement is intended to obviate a difficulty existing in machines as heretofore constructed, where the latches frequently rebound and rest upon the hook or barb of the needle, which is thereby closed at a time when it should be open to receive the yarn. A is the needle latch regulator, the points *a a'* entering the barb of the needle and throwing the latch over upon the shank; the hole *c*, for the passage of the yarn, being made through the arm B which carries the regulator. The latch *e* will be held down by the regulator until the yarn is laid into the hook.

The inventor says: I do not confine myself to the exact form and construction herein described, but intend to make such variations therein as may be found necessary to accommodate the latch opener to the various machines to which it may be found applicable.

*Claim*.—1st. The needle latch regulator, constructed and operating in the manner substantially as herein described and for the purpose set forth.

2d. The needle latch regulator, in combination with the yarn carrier, operating substantially as herein set forth.

No. 13,165.—THOS. FOWLER.—*Improvement in Knitting Machines*.—Patented July 3, 1855. (Plates, p. 66.)

A detailed description of this machine would take up too much room to be given here. Its general features will be understood from the claims and engravings.

The inventor says: The distinguishing characteristics of my improvements in rotary knitting machines for making ribbed work, are expressed or indicated in the following statement of what I claim.

1st. I *claim* combining a revolving radiating series of horizontal fixed hooked needles, and a series of vertical movable hooked needles, that are so operated within and by a revolving slotted cylinder, or its equivalent, and by cams, as described, that the two series of needles shall operate together, and with one, or more than one, set of appliances, each consisting of one sinker and two pressers, and make cylindrical ribbed work, substantially as set forth.

2d. I *claim* combining and arranging the set of movable needles with the revolving slotted cylinder, and one, or more than one, set of stationary cams, each set consisting of the cam E and a depression and an elevation in the cam ring D, as described; so that the movable needles shall be successively carried outward to cast off the old stitches from the radial needles, and then downwards to cast off the old stitches from themselves, and finally, upward and inward to allow the yarn to be again fed upon the radial needles in their revolving course.

And the following improvements, viz:

1st. I *claim* the inside stitch-guide F, constructed and arranged with *throw to sets* of needles, as described, to help to cast off the old stitches

of the radial needles, and to increase the distance between the old stitches and the new ones, upon the movable needles, at the same time that their barbs are depressed.

2d. I *claim* the outside stitch cam G, constructed and arranged as described, to help cast off the old stitches of the movable needles.

3d. I *claim* the cam a, constructed and arranged as set forth, to assist the return of the moveable needles to, and to retain them in, the position they occupy during the feeding of the yarn upon the radial needles.

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No. 13,289.—JOHN PEPPER, assignor to THE "FRANKLIN MILLS."—*Improvements in Knitting Machines.*—Patented July 17, 1855. (Plates, p. 66.)

The needles H rest, and are capable to slide, in grooves *c*<sup>1</sup> of a stationary bar *e*. The rear end of the shank of each needle is bent upward, and enters a groove *h* in the under side of a horizontally reciprocating bar K. (See arrows, fig. 1.) The yarn-guide L is secured to said bar K above the needles, so as to slide with it along the series of needles. In the rear of and below the yarn-guide the groove *h* is made V-shaped, (see dotted lines, fig. 1,) so as to impart to each needle a forward and backward movement, in order to enable it not only to seize the yarn, but to move its fly *g* forward beyond the stitch on the shank of the needle. The reciprocating motion of bar K is intermittent, and, at the times the bar remains stationary, the sinkers perform their motions. The sinkers *o* are attached to a bar Q, which receives an upward and forward motion at proper times. Those of the sinkers *o* which are directly behind the rib-needles P, have no holes. The upward motion is for casting off the loops formed upon the front portions of the hooks of the sinkers. The forward motion of the sinkers is for casting the loops over the hooks of the needles H. The rib-needles P, each one in front of some one sinker, the hook of which is cut away, work between the rest of the sinkers; they are attached to a bar U, adjustable by screws S, so as to vary the length of the rib-loops.

The rib-needle bar moves forward and backward together with the sinker-bar, and receives a proper upward and downward motion by cams, etc.

If plain work is to be done, the rib-needle bar and rib-needles are swung out of the way. (See dotted lines, fig. 2.)

The inventor says: I do not claim a rotary set of rib-needles operating in connexion with a stationary cam, in the manner as represented and described in letters patent granted to me on the sixth day of December, 1854; nor do I claim making the needle stationary, and employing, in connexion with such, a movable set of sinkers or jacks, whereby the stitches are joined by the successive movements of the sinkers or jacks, between the needles.

But I *claim*, making the plain work needle frame or bar stationary, its needles movable thereon, and to operate, in connexion with sinkers, or their equivalents, as described, and applying thereto a movable or sliding cam-bar K, or its equivalent, so as to operate the plain-work

needles in succession, in manner as explained; the advantage of such not only being that no forward movements of the sinkers are necessary, in order to bring the loops of the yarn into the hooks of the needles, but that such simplifies the machine, and thereby correspondingly diminishes the cost of its construction.

And, in combination with the hooked sinkers and ribbed needles, made to operate substantially as described, I *claim* the series of cast-off sinkers, or those formed without hooks, the same being arranged in the sinker-bar, and not only so as to admit the rib-needles to work between the hooked sinkers, but so as to render the machine capable of performing either plain or ribbed work, as specified.

I also *claim*, making the rib-needle take the place of the front or hook of the sinker, in forming the loop for the rib-stitch.

No. 13,561.—WALTER AIKEN and JONAS B. AIKEN, assignors to HERBICK AIKEN and JONAS B. AIKEN.—*Improvement in Knitting Machines*.—Patented September 11, 1855. (Plates, p. 66.)

On the exterior surface of the hollow circular plate A are grooves for the reception of the needles. These grooves are longer than the needles and of sufficient size to hold them steadily, and at the same time to allow them to slide freely back and forth. The needles are flush with the surface between the grooves. The plate is made conical for the purpose of extending the distance between the shanks *x* of the needles further apart than the barbed heads, which arrangement facilitates the movement of the needles while passing through the cam-groove from *c* to *d*<sup>2</sup>, during the revolution of the cam-groove wheel C.

I is the device for regulating the length of the loops. When it is desired to make a longer loop, the needles must descend lower in the groove *o* for that purpose. This is effected by depressing the regulator I and tightening nut *g*; and *vice versa*, when a shorter loop is required. The regulator is made of such a shape as to drive the needles abruptly down the groove.

The inventors say: The general form and construction of the several parts of our machine are new; but we shall confine our claim to the most essential parts, as these cannot be materially varied in construction, in the principles which govern their action, or in the nature of the results produced.

1st. We *claim* the construction of the hollow circular needle-plate, having grooves in its outer surface, as described, for the object specified.

2d. We *claim* the loop-regulator, as described, for the object specified.

No. 13,586.—CLARK TOMPKINS and JOHN JOHNSON.—*Improvement in Knitting Machines*.—Patented September 18, 1855. (Plates, p. 67.)

Bevel-wheel *g* moves bevel-wheel *f*, fastened to hub of the needle cylinder F; the spur-wheel *a* is fastened to and revolves with the needle cylinder, and moves pinion *b*; pinion *b* is fastened to pinion *c*, of

the same size as *b*, and thus drives wheel *d*, which is of equal size with wheel *a*, and is fastened to the central spindle *E*, which spindle turns freely within stud *G*; consequently the spindle revolves in the same direction and with the same velocity as the needle cylinder (pinion *c* works through an opening in stud *G*, as will be seen in the engraving).

The circular plate *S* is fastened to the spindle *E*, and thus revolves inside of, and simultaneously with, the knit fabric *w*; so that all parts of the web shall extend from the circular row of needles, in a uniform direction, toward the axis of the machine, for the purpose of making the action of the knitting-wheels more equal than has been the case heretofore. The oval plate *C* is fastened to, and revolves with, the spindle *E*, to give such shape to the web that the circular rows of stitches shall be drawn off evenly and laid in straight lines upon the take-up roller. The web-flattening bent rod *D* is fastened to plate *C*, and extends to within the slotted bottom-bar of the take-up frame *K*, thus causing the frame to positively revolve in the same direction and simultaneously with the needle cylinder, to keep the knit fabric straight, or without twist, while being drawn off and wound up by the take-up rollers *A B*.

The inventors say: We *claim*, 1st. The manner in which we cause the frame which carries the take-up mechanism to revolve in the same direction and with the same velocity as the needle cylinder, as specified and for the purpose set forth.

2d. Combining the web-shaping plates *S* and *C* with the take-up mechanism, substantially as described for the purpose specified.

No. 13,621.—JOSEPH POWELL.—*Improvements in Knitting Machines*.—Patented October 2, 1856. (Plates, p. 67.)

*A* is the front needle-bar, *B* the back one, connected by slides *C* to the frame. The two sets of needles move simultaneously upward; when at its greatest elevation, the needle-bar *B* comes in a state of rest, while the bar *A* tips over into an inclined position, and both sets of needles interlock, as seen at *a* and *b*, figs. 1 and 2.

These motions are produced by the action of dissimilar cams placed on the main shaft *H*<sup>1</sup>.

The cams *c*<sup>1</sup> act to raise the slides *C*, the cams *c*<sup>2</sup> to lower them, and the cam *e* acts to cause the tipping of the front needle-bar *A*, and consequently of the needles *a*. These cam motions are produced in combination with the rollers *d*<sup>2</sup> *d*<sup>3</sup>, and levers *d*<sup>1</sup> *d*<sup>2</sup> *d*<sup>3</sup> *d*<sup>4</sup>.

It is required that, before the needles descend to cast off their loops, the front row must be elevated to a vertical position, and stand so as to form a line parallel with the back ones. In order to accomplish this, the bar *A* must be allowed to turn on its hinge-pin *d*, so that the front edge may drop down. As the cams *c* and *c*<sup>1</sup> rotate, the lever *d*<sup>2</sup> will drop first into the cavity, and descend to some point, as, say, *x* on *e*, fig. 4, while the slide *C* is still held up by the cam *c*<sup>1</sup>, by reason of the roller *d*<sup>3</sup> not yet having reached its depression, as clearly seen in the fig. 4. From *x* on *c* to the bottom of the cavities the descent is alike.



thus allowing the two bars A and B to descend together, and thereby keep their respective sets of needles in the proper vertical position.

In ascending, the same order is preserved. At  $d'$  is a link connecting the front edge of the needle-bar A with the tipping-lever; and this is fixed in such manner as to become disengaged from the end of its lever  $d^2$  at certain times, that is, when the machine is engaged on plain work; for, when out of gear, the bar A no longer tips over, although it moves up and down with the guides C, consequently its row of needles is not engaged. This disengagement is effected by the mechanism composed of draw-bolt  $g$ , arm  $h$ , on the upright post  $b^2$ , and second arm  $h'$ , extending from the same end which comes into contact with stop C. The re-engagement of the link upon the pin  $f$ , on the withdrawal of bolt  $g$ , is governed by a spring;  $i$   $i'$  are the presser-bars upon standards  $i^2$   $i^3$ ;  $m$ , fixed on stationary rail  $k$ , and  $m^1$ , on movable rail  $k^1$ , are the cast-off plates, as seen in figs. 1, 2, and 6.

The web hangs between these casting-off plates, and passes down under the frame to the take-up roller. At this part of the machine some delicate movements have to be performed, in order to ensure certainty in its working, and this relates to the casting-off of the loops. As loops are formed at the same time on both sets of needles, which have to be cast off together, it is found that the weight of the web hanging between was such as to cause a great strain or drawing upon the needles, especially when the loops had got over the barbs and near the top of the needles—the needles here being of double thickness. To overcome this an easement is effected by a slight vertical motion of the back set of needles, and, immediately after that, by a like motion of the front cast-off bar  $m^1$ . The back needle-bar is attached to the slides C, by the pin  $d$ , by means of an eye at  $B^1$ . This eye is elongated so as to allow of some play, and as seen by the dotted lines below  $d$  in fig. 3. Attached to the eyes are two springs  $C^1$ , which pull upward, as shown. To each eye  $B^1$  there is a down-pull  $l$ , which connects with cross-lever  $l^1$ , passing beneath the main shaft and hinged to the back of the frame; and to operate upon this pull is a cam having an acute point, seen at  $l^2$ , the operation of which is such that, when the needles have descended so that the loops to be discharged have been pushed up the shanks and over the barbs, and approached that point where the strain commences, the point of the cam  $l^2$  shall be just passing along the top of its bearing piece  $l^3$  on the cross-lever  $l^1$ . The top of the back casting-off plate stands a little higher than that of the front one, whereby the cast-off will be effected from the back set of needles first; and so soon as this has taken place, the point of the cam  $l^2$  must have passed the top of its bearing piece, thereby permitting the back needle-bar B to rise on the pin A to the extent of the elongation of its eye, and which rising is effected by the action of the spring  $C^1$ , since the needle-bar is not now held down by the cross-lever  $b^1$ . The front casting-off plate now rises by the cam I, figs. 1 and 2, acting to raise the bar  $k^1$  through the lever  $I^1$ ; and this throws off the loops on the front row of needles. The front presser-bar is to be disengaged at those times when no work is to be done on its row of needles.

At  $n$ , figs. 1 and 6, are seen the latches on the back needle-bar. The under edges are bevelled, and they are hinged to the top of the studs

a feather-spring keeping them up in the position represented. As the needle-bar descends, the bevelled edges strike against the edge of the presser-bar and forces it against the barbs of the needles, holding them closed until the new loops are up and the last course thrown off; they then get clear, and the presser-bar flies back. When the needles ascend again, the flat tops of the latches strike against the edge of the presser-bar so as to turn them down against the force of their feather-springs, and this allows them to pass by without acting on the presser-bar until the next downward motion. The latches on the front needle-bar have a different arrangement for setting. This is because the bar tips over and shifts the place of the studs which hold said latches, and also because they are to be wholly disengaged at all times when the front set of needles are not in action. The inner lower ends of these latches are bevelled, as seen at  $n^1$ , to press the bars on descending, as is the case with the back ones. On the back is a locking-spring, seen at  $o$ , fig. 6, which can ride into two recesses  $o^1$   $o^2$ , on the back. This sets the latch in the positions in which it is thrown, in passing by the presser-bar, on the upward ascent of that bar: for, as the top of  $n^1$  strikes on the under side of the bar, the latch is bent down to clear it, and the spring rides into the recess  $o^2$ . Thus, if there were nothing in the way to shift the latch back, it would go by said presser-bar, without acting on it on the next downward stroke.

To set the latch, therefore, it is provided with a short arm  $o^3$ , which is brought up to strike against a pin or arm  $p$  by the elevation of the front edges of the needle-bar A, when that is raised by the link  $d^1$ . This throws over the latch and sets it, as in fig. 2, ready to act upon the presser-bar. When, however, the link  $d^1$  is unhooked, as the needle-bar will be no longer tipped over, the arm  $o^3$  does not reach the pin  $p$ , and the arm accordingly plays up and down clear of the presser-bar, which it should do, as at that time no loops are formed on the front set of needles. The sinkers lie horizontally, being arranged at the back of the needles and at right angles to the back set, as shown at  $r$ , and their jacks hinged in a line parallel at  $r^1$ , the sinkers and jacks being held in place by pressing through a metal rack supported by a bar  $s$  on the frame. The motion of both jacks or sinkers is horizontal; the sinker is finished at the end, which plays between the needles, with the usual fork to sink the loops in the ordinary form. The sinkers are also pushed between the needles by the action of a slur-cock  $s^1$ , fig. 2, which, in this case, plays against the ends of the jacks, instead of on their tops, as in some of the old frames. There are two springs acting upon the jacks; one is a locking-spring  $r^2$ : and there is a projection on the jacks at  $r^1$ , which shows how the sinkers are held back. The springs named are always tending to force the jacks forward. The slur-cock, as it passes along, strikes the ends of the jacks just below the end of the spring  $r^2$ , and pushes them so far as to force the projections  $r^1$  beyond the other spring  $r^2$ ; the other spring  $r^2$  then forcing them along their full distance.

In fig. 2 is a cam working by a bevel-gear from the main shaft, being a groove cut in the side of an eccentric-wheel. In this a pin, having on it a friction-wheel  $H^1$ , travels, the front being attached to a lever K, and thus a vibratory motion is imparted. The upper end of cock K is

connected with a slide-bar  $K^1$ , to which the slur-cock is attached, and from this slide-bar connexion is formed with another one standing over the needles, as seen at J. This effects the movement of the yarn-guide. The part for returning the sinkers, and carrying them clear of the needles, provides a self-adjusting means for varying the depth of the loops, and thus weaving the course slack or stiff.

This part consists principally of two bars, one within the other, and suspended to the frame, so as to move back and forth in the direction of the sinkers.

The first or outer bar is seen at  $t$ , and the arms by which it is suspended at  $t^1$ , figs. 1 and 2. Upon this is a rack  $t^2$ , through which the sinkers play. It is by the vibrations of this bar that the sinkers are pushed back, after having been operated upon by the slur-cock; as it also regulates the distance, the springs  $r^3$  can throw them forward. On each jack there is a notch cut, as seen at  $r^4$ , fig. 2. When the sinkers are to retreat, the bar  $t$  moves back, and the back edge of  $t$  must carry along the sinkers. The locking-springs  $r^2$  ride past the projections  $r^1$ , and thus lock the whole row. The bar now moves towards the front of the frame, and stops at such distance as it is intended to allow the sinkers to return in forming the loops.

The second bar is for the purpose of regulating the extent of forward motion the bar  $t$  shall have at different times, in order that the slack or stiff work may be woven as before mentioned. The second bar is seen at  $u$ , and lies under  $t$ , extending the whole length inside of the main frame. It has at each end a sloping part, as seen at  $u^1$ , fig. 5. While it is carried back and forth with the movement of the main bar  $t$ , it has also a motion of its own along the bar from right to left; and by this means different parts of the slope are brought opposite to the point of a regulating screw  $u^2$ , figs. 1 and 5, which is fixed permanently to some convenient part of the frame. It has a milled head which receives the edge of a gauge-spring  $u^4$ . Thus it will be seen that the main bar  $t$  will be stopped by the point of the regulating screw striking against the sloping part of the bar  $u$ , and therefore, by shifting the bar  $u$  along to the right or left, the movement is arrested sooner or later, as may be. The general operation of the machine is as follows:

The bar  $t$  tends always towards the front of the machine by the pressure of springs, one of which is seen at  $t^1$ , figs. 1 and 5, where it sets against the projecting end of it.

On each end of the main shaft, but outside of the main frame, is a cam  $v$ ; these act against lever  $v^1$ , fig. 1, the upper ends of which levers strike the bar  $t$ ; these, therefore, push back the bar, and thus the jacks are set in their locking-springs.

As the cam releases the bar, it comes forward by the force of the springs  $t^1$ , until arrested by the points of the regulating screws  $u^2$ ; which forward motion is more or less, according to the position of the bar  $u$  before named. The sloping part of that bar represents adjustments for sinking the loops for ribbed and plain work; the deepest part is when the work is to be woven ribbed, the next when woven plain on a single set of needles. These come into play during the operation of weaving a garment or cuff of a shirt, and are actuated by a cam G, figs. 1 and 3, as at each revolution of G one set of needles is thrown off,

as before described; so at that time must the bar  $u$  be shifted to reduce the throw of the sinkers, so that only the yarn required for a plain web will be fed. To accomplish this, the arm  $h^1$  is extended beyond the vertical shaft  $G^2$ , where it takes hold of a pin  $h^2$ , figs. 3 and 5, connecting with the shifting-bar  $u$ ; and the movement occasioned by the striking of  $G$  against  $h^1$  shoves the bar  $u$  along, so that at the next vibration of  $t$ , the point of the regulating screw  $u^3$  will strike the highest part of the slope on  $u$ , and keep the bar  $t$  from coming so far forward. This then arrests the motion of the sinkers sooner, and they accordingly sink the loops shallower and as required for plain work. Every revolution of the main shaft  $H^2$  produces one complete course; and in weaving a garment a long piece of web must be woven before any of those shifting parts will be brought into play a second time. At  $H^4$  is a worm wheel, which operates to turn the vertical shaft  $G^1$ , notch by notch of the toothed-wheel attached. The number of notches in this wheel is the same as the number of courses required to complete a garment or article, as a cuff. As such articles are made in a continuous web, it is necessary that some finish be given, as well as a means for separating them apart. This is done by forming at each end what is known as a "welt." This is a few courses woven plain with a draw-thread, which, being taken out, separates the articles and leaves a row of loops to be taken up by the needles on the frame which is engaged in weaving the shirts to which the cuffs are to be attached.

*Claim*—1st. So combining two sets of needles, such as are commonly employed on knitting-frames, that they may be brought into joint action, and have loops formed on both of said sets, at one and the same time, and thus form a ribbed fabric, as described.

2d. The arrangement of the needle-bars and the two pressure-bars, so combined that, when both sets of needles are in action, both pressure-bars will also act upon the barbs of the needles, as described.

3d. The self-setting latches in combination with the needle and pressure-bars, as described.

4th. The combination of the regulating bar  $u$  with the shifting bar and the set-screws, for regulating the throw of the sinkers and depth of the loops, as described.

5th. The manner of discharging the loops—that is to say, casting off those of one set of needles a little in advance of those of the other set, and giving to the first set of needles an upward motion, as soon as the cast-off has been effected from them, for the purpose of relieving the strain, as set forth.

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No. 13,693.—JOHN H. DOOLITTLE, assignor to the "AMERICAN HOSIERY Co."—*Improvement in Knitting Machines*.—Patented October 16, 1855. (Plates, p. 6S.)

The frame cams on the driving-shaft, levers, rock-shafts, and all other parts of this machine (except those claimed as improvements) are made substantially as described in the patent issued to Rufus Ellis of Northampton, June 1851.

I construct the feed motion by a bar  $A$ , having projecting teeth on the front end, which fit into the spaces between the needles, as repre

sented at *a* in fig. 3. This bar slides backward and forward horizontally in a guide of bar *b*, moved by lever B. This lever B is worked by cam C, and is supported by the fulcrum D, and held up to the cam by the spiral spring E; and its lower end works in a slot *c* in the block *d*.

The front end of bar A also receives a lateral motion by means of bar *b*, which is attached to the small bar *f* by a joint-screw *e*. This small bar *f* receives a longitudinal reciprocating motion from right to left, or *vice versa*, by means of the double projecting pin *g* working in the cam groove *h* or *i*, figs. 3 and 4.

The feed motion is reversed by means of the inclined planes *k* and *l* attached to the needle tighteners, so that when the needle bar C is passing in the direction indicated by arrow, fig. 5, the inclined plane R will pass under the end of the spring-bar *m* and raise it, which raising will depress the left-hand end of bar *f*, and force the projecting pin *g* into the cam groove *h*. When pin *g* approaches the curved part of the cam, it will move the needle-bar the distance of one needle to the right, ready to knit the next stitch. When the needle-bar G is at the end of the right-hand motion, the inclined plane *l* will raise lever *n*, and of course force pin *g* into cam-groove *i*, which, being of different shape, feeds the needle-bar in the opposite direction.

The ears of the series of needles are attached to two studs H and I on the needle-bar C, which latter slides in a dove-tail groove. Pin *p* is attached to stud I, which pin is provided with two eyes, through which a pin passes to connect the needles. The upright H is attached to needle-bar G by means of a binding screw, so as to be movable at pleasure, and have a slot in the top into which passes the piece K, so that it will be secure in the slot and recess, as seen at *r*. To the left-hand edge of this piece K there are also two loops, which serve to hold the joint pin which attaches the needles to the piece as seen at *s*. By this means any desired number of needles can be attached and tightened with the greatest ease, and their number increased or lessened. The apparatus for counting the number of courses that are to be knit, (as for the heel of a stocking,) is worked by the means of two cams, L and M, (on the upright sheet of the cams which give the feed motion,) engaging the horizontal sliding-bar N. When the small feeding-bar *f* is raised so as to be worked by the groove in the upper cam F, the rod O will raise the bar N so that the cam L will take hold of the catch part *t*, and draw it to the left nearly against the cam-shaft, which will cause the upright P to force forward the dog or hand U, and revolve the counting wheel one notch. When the left end of lever *f* is depressed, the cam M draws back, so that the counting wheel will be revolved *one* notch for every two courses knit across the heel. When it is determined how many courses are to be knit across, half the number of holes is counted off from the end of the block *v*, and there is inserted a pin as *w*, so that when the count-wheel is revolved sufficiently to bring the pin *w* against the end of the block *v*, it will force back the end of the bar Q so as to release the catch, when a spring will force the bar Q longitudinally to the right, and by means of a clutch-lever throw the driving-pulley out of gear, and stay the

knitting. The longitudinal motion of the bar N also gives a longitudinal motion to the rock-shaft I, which works the yarn-guide O through the medium of the connecting-lever U, so as to cause the yarn guide to bring the yarn across the needles in the desired direction, whichever way the feed motion is working. The yarn-guide O is made with a spring, to allow knots or other inequalities to pass through without breaking the yarn.

*Claim.*—1st. The method of producing the feed motion, by means of a feed bar, with teeth formed upon it, of proper shape to engage with and move or feed the series of needles, substantially as described.

2d. The method of reversing the feed motion by means of the inclined planes *k* and *l*, spring bars *m* and *n*, swinging bar *p*, and the cam grooves *h* and *i*, when constructed, arranged, connected, and made to operate in the manner substantially as described.

3d. Attaching the blocks or inclined planes *l* and *m* to the needles in such a manner that they will always operate at the end of the course without reference to the number of needles used, substantially as described.

4th. The method of working the counting apparatus, in combination with the method of throwing the machine out of gear, when the parts are arranged, constructed, and made to operate substantially as described.

No. 13,750.—ARASMUS FRENCH.—*Improvement in Knitting Machines.*—Patented November 6, 1855. (Plates, p. 68.)

Hoop *a* (open at *c*, so as to serve the same purpose as the ends of the common knitting-needles used by hand for forming the stitch) is suspended in clamps *d*, in such manner that two opposite clamps sustain the hoop, while the clamps are alternately opened so as to allow the work to be fed in either direction. The clamps consist of two sliding parts, *d e*. The circle B receives a reciprocating circular motion from eccentric C. The points of wedges *h* attached to circle B pass through transverse slots in the part *e* of the clamps and force it back, thus opening the clamps. When the wedges are withdrawn, the clamps are again closed by India-rubber springs *g*, so that they will be alternately opened and closed at every stitch, and so that while two of them are holding the hoop, the other two will be open and allow the work to be gradually fed by the operation of the needle in taking off the loop. The needle-bar is supported in a hollow socket *k*, secured to arch-bar F by a pin *l*, so as to allow it free motion in all directions. The point of the needle describes a small circle, corresponding to the motion of the rear end of the needle-bar, pivoted to the eccentric G, which also works on the eccentric C. The arch-bar F can be moved longitudinally by means of jointed piece K, working against slide *n*, or drawing it back by bar *p*, which is effected by a pin or pins *o*, set in the holes in the face of the circle L, which circle is revolved by tooth *q* on eccentric C. There are as many pins used as it is desired to narrow times in knitting round. As the arch-bar sustains the needle-holder, a slight longitudinal motion will cause the needle to take two loops from the point of the hoop at once, and make but one stitch from them.

*Claim.*—The combination of the eye-pointed needle D with the hoop *a a*, when constructed, arranged, and made to operate substantially as described.

2d. The method of opening and closing the clamps *d d d d*, for holding the hoop *a a*, by the use of the cams or wedges on the circle B, when worked by the same eccentric which works the needle, when the whole is constructed and made to operate substantially as described.

3d. The method of narrowing by giving a longitudinal motion to the arch-bar F, when constructed, arranged, and made to operate substantially as described.

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No. 13,811.—TIMOTHY BAILEY.—*Improvements in Knitting Machines.*—Patented November 20, 1855. (Plates, p. 69.)

The sector  $g^3$  and wheel  $g^5$  are secured to shaft  $g^2$ ; wheel  $g^4$  turns loosely on said shaft; ring  $g^3$  rests loosely upon the inclined face of wheel  $g^5$ . The finished tube of yarn passes down between the wheel  $g^5$  and ring  $g^6$ , as shown in figure 3. The shaft  $g^3$  is suspended from arm  $g$ , fastened to revolving ring  $f$ ; as shaft  $g^3$  is carried round by the revolution of ring  $f$ , the wheel  $g^4$  revolves by friction against the yarn-tube, and carries back said tube at the points of contact towards the butts of the needles, thus removing an already formed stitch out of the way. As these stitches leave the wheel, they are received by the sector  $g^3$ , which holds them back until ready to be acted upon by the wings or burrs  $i^2$ , which lands said old stitches as hereinafter described.

The stud  $h$  carries upon the bent axle  $h^1$ , first, a small toothed wheel  $h^2$ , and subsequently the sinking burr  $h^3$ . The teeth  $x$  on wheel  $h^2$  are equal in face, or nearly so, to the space between the needles at the points where said wheel travels over the needles, and the teeth therefore mesh between the needles, which therefore constitute the rack which causes said wheel  $h^2$  to revolve upon its own axis, as that axis is carried around by the ring  $f$ ; other teeth  $x^1$   $x^1$ , upon the same gear-wheel, take into corresponding teeth upon the sinking burr  $h^3$ , and this burr, therefore, revolves *in pari passu* with the gear  $h^2$ .

Upon  $h^3$  are wings or peculiarly shaped screw-threads  $x^2$   $x^2$ , corresponding in number with the teeth  $x$ , and of sufficient elevation above the general contour of the burr  $h^3$  to enable them to sink down a loop of yarn between each needle and its neighbor, the yarn being delivered through the hole in  $z^1$ , and through a small aperture in a plate  $h^4$  attached to the stud  $h$ . The levers or wings  $h^2$  are much thinner than the space between two needles, but the teeth  $x$  cause each wing to enter accurately in the centre of the space, and do not permit the wing to grind against one side of each needle, as would be the case if the burr  $h^3$  was revolved by the direct action of the needles against its wing; the loop is, therefore, by means of the use of the gear, sunk regularly in the centre of the space; there is room for knots and uneven spots of yarn, and there is but little danger of cutting the yarn, as in a shear, by nipping it between the side of each needle and the wing, or screw-thread. The small depression at  $a^4$  in each wing receives the thread, and, pressing it down between the needles, is carried

by the same, and slid under the beard until it reaches the head of the needles, forming it into a loop.

Upon the axle  $i^1$ , attached to stud  $i$ , revolves a burr  $i^2$ , also having wings, to which is attached the pressing conoid  $i^3$ . The axis  $i^1$  is inclined at a considerable angle to the radii which the needles represent, and the wings  $i^4$  on burr  $i^2$  enter behind the old stitch, and gradually shove it forward over the needle beards, and towards the head of the needles. While they are performing this operation, each beard is held down by the revolving conoid  $i^3$ , which has formed in it helical grooves, so shaped that each groove takes in each beard at its throat, and gradually rolls it down towards its points, where the landing-wings land the old stitches over the beard.

The landing-burr, and the pressing-conoid thereto attached, are revolved by the needles acting as a rack against the wings  $i^4$ , which also act as cog-teeth.

Two or more rollers  $o$  are secured in a proper frame; on the axis of one of these rollers is secured a toothed wheel  $o^1$ , and that axis is prolonged and passed through a hole  $o^2$  in a plate  $o^3$  pivoted under the apertures at  $o^4$ ; this plate, therefore, may oscillate in a horizontal plane, and the hole  $o^2$  is so large that the shaft passing through it can move to and fro easily. The knitted tube passes between these rollers, so also does the shaft  $g^2$ ; and these rollers hug the tube tightly, and are supported thereby; their weights, therefore, act as a feed weight to the tube, and the rollers descend with it. Any one point, moreover, in the rollers or their frame, will describe an egg-shaped curve, compounded from the planetary motion of shaft  $g^2$  and the sliding motion of the shaft in hole  $o^2$ . Just below the oscillating plate  $o^3$  is secured a species of rack  $o^5$  with three or more teeth  $y$ ; if the rollers with their frame be now supposed to be clasped around the finished tube, and around shaft  $g^2$ , and rolled upwards along said tube as high as the shaft in hole  $o^2$  will permit, they will not be able, on account of the dogs  $o^6$ , to roll down over the surface of the tube, but they will descend as the tube descends in receiving an accession of new stitches at the upper end thereof; but while these new stitches are forming, the rollers and their frames, and consequently the toothed wheel  $o^1$ , will describe egg-shaped curves, and the path described by  $o^1$  will at certain times pass over the rack  $o^5$ . When so many rows are completed, and the tube and roller-frames fall so far that the teeth on  $o$  touch the thin rack-teeth  $y$ , then will these rack-teeth cause the wheel  $o^1$  to rotate as it passes over them, and will, consequently, force the whole frame to climb along the tube of knitted stuff and take a new hold. The frame, even while climbing, is supported by, and consequently weights the tube; and when the frame falls again so that the teeth of wheel and rack are again in contact, the frame climbs as before.

*Claim.*—1st. Actuating the sinking or other burrs by means of a gear-wheel, whose teeth are actuated or rather acted upon by the needles, as a rack, whereby the wings in said burrs are freed from contact with the needles, and do not nip the yarn tightly between said wings and needles, substantially in the manner and for the purposes described.

2d. Carrying back the old stitch, and holding it back by means of a



disc-wheel and segment, having a planetary motion, as set forth; and also the leading of the finished cloth through a ring, or its equivalent, surrounding a shaft, having a planetary motion, whereby the action of the drag weights is properly adjusted upon different portions of that circuit of the cloth which is being acted upon by the needles and levers, substantially as specified, and in combination with a cloth or knitted tube, to which is imparted substantially such a revolving motion as is described.

3d. A self-adjusting climbing drag weight, constructed substantially in the manner set forth.

Lastly, a stationary series of needles in circuit, when constructed and arranged substantially in the manner described, in combination with revolving burrs driven by independent gearing, and travelling from needle to needle, whereby the turning of the finished cloth on its own axis is avoided, and all difficulties incident thereto obviated.

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No. 12,771.—R. L. HAWES, assignor to ROBERT RENNIE.—*Improvement in Machines for Dressing Lawns*.—Patented April 24, 1855. (Plates, p. 69.)

The goods enter the machine over the bar P, the selvages being put upon the pins *y* of wheel M M<sup>1</sup> at a point S, where these points approach nearest to each other. As the wheels M M<sup>1</sup> revolve, the points continually recede from each other until they interlock with those upon the hoops D, to which the fabric is transferred, the brushes N N<sup>1</sup> serving to press it down upon the hoops. The hoops or rings D surrounding the drying cylinder B are adjustably attached to discs E E<sup>1</sup> by screw-bars *b* and nuts *c*. Two eccentric rods *f f*<sup>1</sup> hook over pins *e e*<sup>1</sup> on radial arms H H<sup>1</sup>, which arms vibrate freely on hollow bearings C; the pawls *g g*<sup>1</sup> upon the ends of arms H H<sup>1</sup> operate upon inclined teeth *h h*<sup>1</sup> projecting from the face of the discs E E<sup>1</sup>. When the pawl *g* moves forward striking-tooth *h*, it carries disc E and hoop D a certain distance; when the pawl moves back, it steps over the teeth *h*, and communicates no motion to the hoop. As the eccentrics are set at an angle of 180°, the hoops and selvages will be moved alternately, and the rigid adhesion of the warp and weft threads will be broken, which gives proper pliancy to the material.

Cords *p p*<sup>1</sup>, with one end attached to vibrating arms H H<sup>1</sup>, and the other to springs *g g*<sup>1</sup>, pass around pulleys *m m*<sup>1</sup>, and impart to them and their sleeves *l l*<sup>1</sup> a back and forth motion; and the sleeves (by means of tooth *o* on the sleeve and pawl *n* on the rollers *k* and *k*<sup>1</sup>) communicate an intermittent rotary motion to the rollers *k k*<sup>1</sup>, which rollers turn freely on stationary shaft K. The roller sections *i i i* revolve freely and independent of each other on their shaft. As the selvages alternately leave the machine, they pass between the rollers *i* and the corresponding one of the rollers *k* or *k*<sup>1</sup>, and as these revolve intermittently, the selva is alternately drawn off.

The inventor says: I do not claim finishing lawns by causing the selvages to advance alternately as the goods through the dressing machine, as this is done upon the machine described in Newton's *London Journal*, conjoined series, vol. 32, page 77.

But I do *claim* the stationary heating cylinder in combination with the hoops D, having an alternate intermittent revolving motion, in the manner described. and for the purpose set forth.

2d. The sectional roll I, in combination with the rollers *k k'*, operating substantially as described for the purpose of drawing the selvages alternately from the machine as set forth.

No. 12,120.—ABRAM BRIGHAM.—*Improvement in Looms*.—Patented January 2, 1855. (Plates, p 69.)

The treadles are of the common form, and provided with a tappet, on which the cams operate to move the harnesses. On the last cam upon the outward side is cast a lip wide enough to operate on a slide, to which is fastened a tappet in the same manner as to the treadles. The slide extends no farther forward than the tappet, and is not attached to the harnesses, but to the last treadle. This slide is provided with one or two slots, sufficiently long to clear the lip in moving back or forward, when the loom is weaving the tube. One slot moves on the pin in the stand which holds the treadles to the back girt. The other slot moves on a screw or stud pin made fast to the last treadle, but slides easily on both. While the tube is being woven, this slide and tappet are held back far enough to clear the lip on the last cam. When the bottom is to be woven, the slide and tappet are brought forward to operate on the lip, and the treadle assumes the position shown in dotted lines in figure 6. At *c* is shown, on the hub of the cam, a convex surface for self-adjusting and fastening the cams. Figure 7 shows an intermediate cam with four concave surfaces on both sides of the hub shown at *r*, and corresponding in size with the convex ones in figure 1.

*Claim*.—1st. The above described mode of locking together and adjusting two or more cams on one shaft, viz: by means of the convexities and concavities applied to them, essentially as specified.

2d. The combination of the movable or sliding tappet *t*, and the extra cam or lip *p*, with each other on the main cam or its shaft, and the treadle, the whole being made to operate together, substantially in manner and for the purpose as stated.

No. 12,225.—JOSEPH WELSH.—*Improvement in Looms*.—Patented January 9, 1855. (Plates, p. 70.)

When the returning shuttle strikes the picker E, which, being in contact with the upper end of the face of the spring-lever G, causes it to yield slightly, (thus easing the blow of the shuttle,) the lever instantly recovering its position, the shuttle-box commences to move, and one of the planes of the block *f* thereon being in contact with the projecting pin *g*, the upper end of the lever G is necessarily forced along the plane, and the picker following in contact therewith, under the action of its spring, is necessarily also separated from the point of the arrested shuttle, which is thus allowed to be moved by the box freely, up or down, as the case may be, and the other shuttle brought in proper position before the picker, as the upper end of the spring-lever G returns upon the other plane, and is arrested by the stop.

The inventor says: I do not confine my claim to the precise construction and arrangement of the lever *G* as shown, nor to the precise mode shown of causing it to produce the effect described;

But I do *claim*, in combination with the lay, the lever *g* and cam *f*, when arranged substantially in the manner described, so that in every change of the shuttle-box, the picker shall be released from contact with the shuttle by a positive motion.

No. 12,229.—WM. TONGUE, assignor to HIMSELF and JAMES BUCKLEY.—*Improvement in Looms*.—Patented January 9, 1855. (Plates, p. 70.)

The treadles of the loom being in connection, as before described, with the heddles, and these, as just explained, with the continuous cord *A*, through the medium of the wires *a*, levers *D*, and double pulleys *C*, when any one, or any number, less than the whole of the treadles, is depressed, the corresponding levers of heddles necessarily follow, uplifting all the others, and each heddle-leaf being kept separated laterally from the others, by means of the rack *G*, their motion up and down is steady, free, and accurate.

The inventor says: I do not claim the double pulleys *C*, nor the levers *D*, nor the wires *a*;

But I do *claim* the combination of the continuous cord *A* with the pulleys *B* and double pulleys *C*, substantially and for the purpose as herein described, irrespective of the number of the double pulleys *C* or pulleys *B*, as these are intended to be increased or diminished, as the number of sheds wanted may require.

No. 12,236.—JOHN H. ALLEN.—*Improvement in Temples for Looms*.—Patented January 16, 1855. (Plates, p. 70.)

When the lay beats up, it strikes the two arms *E F*, and bears their spring against the screw; and as the arms are made to project beyond the front surface of the spring, the spring will operate with a double action upon the shaft of the lower jaw, in a manner conducive to the preservation of the temple. Immediately after the temple clasps the cloth, the same spring that closed the jaw throws the temple backward and outward, thus keeping the cloth fully extended the entire length of the reed, and causing the temple to make its greatest draught upon the cloth at a time when the cloth is free from all tension. The temple then holds the cloth completely extended until the reed again strikes it, thus entirely preventing any draught of the cloth coming upon the reed, and at the same time leaving the selvage-thread free from all outward strain, which the reed naturally makes upon them when it is driven forward towards the cloth.

*A* represents the upper-jaw bar of the temple, whose jaw is shown at *a*. *B* is the bar of the under-jaw or arm *C*, whose jaw is shown at *c*. The joint pin *f* is supported by the hinge-plate *D*, forming the joint of the temple.

*Claim*.—Arranging the turning joint of the temple about midway be-

tween the ends of the shaft of the inner jaw, in combination with applying the spring G, so that it shall rest at or near its middle against the adjusting screw K, and at its ends against the two arms from the said shaft; the same enabling me not only to nearly, if not entirely, balance the temple, and prevent it from undue pressure on the cloth, but to obtain from the spring a double action on the shaft, or an action on each side of the turning joint, by which the advantages in operating the temple and preserving it in correct operation are obtained, as specified.

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No. 12,274.—JAMES ECCLES.—*Improvement in Looms*.—Patented January 23, 1855. (Plates, p. 70.)

The lever A oscillates with the lay F, and in consequence of each vibrating from different centres (D and H,) the pin E will describe a certain way within the slot in the rod A. When the lay is furthest from the cloth, the pin E is at the top of the slot, thereby holding the lever A and picker G forward in the shuttle-box C. As the lay F and lever A move forward, the pin E descends and lever A rises, (see dotted lines I and K,) so that when the reed strikes the cloth, the pin E will be found at the lower part of the inclined slot of lever A, which will then have receded from the shuttle in box C. Thus a lateral motion is given to the picker G by the pin E traversing the slot of lever A, as the lay F vibrates to and fro.

*Claim*.—Moving and holding the picker forward in movable shuttle-boxes, for the purpose of stopping the shuttle thereby, and causing the picker, after having stopped the shuttle, to recede, substantially as described, and for the purpose set forth, by the action of the lever A and pin E, or their equivalents.

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No. 12,293.—GEORGE COPELAND.—*Improvement in Looms*.—Patented January 23, 1855. (Plates, p. 71.)

The general features of this improvement can be understood from the engraving and claims; a more detailed description would take up too much space.

The inventor says: I *claim*, 1st. Placing the cams G G G and G<sup>1</sup> G<sup>1</sup> G<sup>1</sup>, which operate the two sets of harness, upon two shafts F and F<sup>1</sup>, carried by opposite arms of lever-beams K K, which are capable of rocking upon a fixed shaft D, with which the cam-shafts F F<sup>1</sup> are geared, and from which they receive the motion, substantially as described, relatively to each other, to change the operation of the harness.

2d. The method described of securing the lever-beams K K to maintain the proper position of the cam-shafts, for one mode of operating the harnesses, and changing their position for the other mode of operating, by means of a spring or springs c c or equivalents, or hook e and a disk N or equivalent, carrying a stud k, all operating and acted upon substantially as set forth.

3d. In weaving the closed part of the fabric or bottom of the bag, I claim giving the lever-beams a continual rocking movement on the shaft D, for the purpose of enabling them to be caught by the hook e, and

secured in position for weaving the open part of the fabric, as soon as a sufficient length of closed part or bottom has been woven, and the hook escapes from the stud *k*, which holds it during the latter weaving operation.

4th. Though I do not claim the race-ways in the same loom, with two shuttles which move simultaneously—one leaving its thread in the upper, and the other in the lower of two sheds opened one above the other—

I claim, for the purpose of throwing and catching the two shuttles simultaneously, pivoting the shuttle-boxes to the end of the lay, substantially as described, so that they may by a vibrating or swinging motion move opposite to the upper or lower race-way, as required.

5th. I claim the manner described of operating the two shuttle-boxes, so that both may move simultaneously to and from the position, by throwing and catching the shuttles, by connecting both with a lever *T*, which is arranged to work under the lay, and receives the required motion from a treadle and cam, or other analogous means.

6th. I claim the slots in the bars *p p*, which form the upper race-way, for the purpose of enabling the weft-thread, which is being carried through the warp, to draw directly, or nearly so, from the filling point of the cloth or fabric.

No. 12,457.—WILLIAM V. GEE, assignor to the "ATWATER AND BRISTOL MANUFACTURING Co."—*Improvement in Looms*.—Patented February 27, 1855. (Plates, p. 71.)

The ends of the treadles *d* are connected with levers *f*, (mounted at right-angles to the line of the treadles,) and these are in turn connected with the inner ends of two double sets of levers *g g* and *g<sup>1</sup> g<sup>1</sup>*, to the outer ends of which the several leaves of harness *h* are suspended by wires *i* or by cords. The treadle-frames descend by their weight; and they are drawn up when required by the action of the cams *d<sup>1</sup>* on the treadles, and their connexions with the levers to which the harness leaves are suspended. The harness is divided into two sets, one half suspended to the lower set of levers *g g*, and the other half to the upper set of levers *g<sup>1</sup> g<sup>1</sup>*; and each set must be complete in itself, the number of leaves in each set depending upon the fabric to be woven. One half of the warp-threads for each web are passed through the mails of one set of harness, and the other half through the mails of the other set; so that each set can weave a complete web of a given width, or both sets may weave a web of double that width. The one set of treadles actuates both sets of harness; but if one set be lifted and kept up, then they will only actuate the other set. When weaving the entire width, both sets of harness are kept in action; but when a button-hole is to be formed, the action of one set is suspended and lifted up, that the shuttle may pass under the warps governed by it, whilst weaving the web on the other side of the button-hole, whatever may be its length, which is effected in the following manner: The two sets of levers *g g* and *g<sup>1</sup> g<sup>1</sup>* are each set divided into two parts, one extending from near the middle to the right, and the other to the left. They turn on fulcrum pins *i<sup>1</sup>* and *i<sup>2</sup>*, and their outer ends rest in stirrups *j<sup>1</sup> j<sup>2</sup>*, one at

each end, and adapted to slide vertically in grooves in the two beams  $k$  and  $k^1$  which enclose the levers. These stirrups are connected each to the outer ends of levers arranged in pairs  $l$  and  $l^1$ , one pair for each set of stirrups, the two levers of each pair being connected by a pin on the end of one working in a slot in the other, so that one will work the other; and one of each pair is connected, by a rod  $m$ , with one of the sliding-bars  $n$  and  $n^1$ , so that when either of these bars is drawn down, the two stirrups connected therewith will be lifted up, which will in turn lift one set of levers  $g g$  and  $g^1 g^1$ , and thus elevate and suspend the action of one set of harness whilst the other continues to operate. The bars  $n n^1$  are drawn down by treadle  $o o^1$ , actuated by cams  $p p^1$  (the action being in opposite directions, by having the two treadles  $o o^1$  connected by rods with the opposite ends of balance-lever  $q$ ). Treadle  $o$  is connected, by a joint-link  $r$ , with a slide  $s$ , which works on ways  $t t$ , by which connection the slide is made to move up and down at every rotation of the cam-shaft; the bars  $n n^1$  carry a spring-catch  $u u^1$ , and whenever either of these catches is forced towards the slide  $s$ , it takes hold of it in its descent and draws down the bar; and as the bar is notched at  $v$ , to receive a spring-dog  $w$ , it is held until the dog is drawn out. Thus the two bars are drawn down to lift up either of the two sets of harness, or liberated to permit the harness to be operated by treadles. The time when either set of harness is to be lifted and be liberated, and the length of time that they shall be suspended and kept in action, is determined by a cam-barrel  $x$ , with four cam divisions, 1 2 3 4. Cam-barrel  $x$  receives slow motion by worm-gearing, and the four divisions are so disposed as to act each on one of four spring-levers  $a^1 a^2 a^3 a^4$ , the first two corresponding with the bars  $n$  and  $n^1$ , so that when a depression of the divisions in the cam-barrel passes under either of the two levers, they are permitted to be forced by the tension of their springs, and thereby to force in the spring-catches  $u u^1$  on the bar  $n$  or  $n^1$ , so that the slide  $s$  will catch hold of, and thus draw down the appropriate bar, which is there held by the spring-dog. The circumference of this cam-barrel, its velocity relatively to the other parts of the loom, and the distance between the several depressions in the second and third divisions of the cam-barrel, determine the periods when either of the two bars  $n n^1$  shall be drawn down to suspend the action of either of the two sets of harness. The other two divisions determine when the bars shall be liberated, which is done by the two spring-levers  $a^3$  and  $a^4$ , each of which carries a pin  $b^1$ , which passes through the corresponding dog  $w$  that holds down the bar; and the depressions in these cams permit the levers to descend, so that these pins may pass through sufficiently far to be acted upon by a cam projection on slide  $s$ , which forces the spring-dogs out of and liberates the bars.

*Claim.*—The method of forming button-holes in the process of weaving suspender webbing and other fabrics, by mounting the loom with two or more sets of harness, each governing all the warp threads on one side of the intended button-hole, and each set being lifted and suspended, substantially as and for the purpose set forth.

Also, connecting each set of harness under the before-named method of weaving fabrics with button-holes, with a bar or slide governed by

a cam and catch, or the equivalent thereof, to suspend the operation of either set of harness, substantially as described.

Also, in combination with the mechanism described, for lifting and suspending the action of the sets of harness or any equivalent therefor, the mechanism for determining the period of the suspension of the action of the several sets of harness, or any equivalent therefor, substantially as and for the purpose specified.

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No. 12,565.—LEWIS VAN RIPER.—*Improvement in Looms*.—Patented March 20, 1865. (Plates, p. 72.)

The loom is provided with a pair of heddles K and L of the usual construction, operated by treadles M and cams N in the usual manner, so as to open a shed at each beat of the lay; and if the action of these heddles upon so much of the warp-threads as are passed through them is not counteracted or modified, plain cloth will be the result. But a small portion of the warp-threads are passed through the heddles, while the greater part of them are passed through the eyes of a series of needles *a* and *b*, placed in front of the heddles, though every alternate thread of that part of the warp which is to be woven into gauze-fabric is passed through these needles. The purpose of the needles is to intertwist together between each weft-thread, alternately to the right and left, every pair of warp-threads through them; that is, one thread of the upper series of needles and the corresponding thread of the lower series are intertwisted or twined together to the right after one weft-thread has been thrown, and to the left after the next weft-thread is thrown. To produce this effect it is only necessary that the warps of the two series of needles should be crossed at every second pick; for their return from the crossed to the parallel state produces the reversed twining.

The upper series of comb-teeth or needles *a*, is attached to and projects downward from a bar *o*, which is free to be moved up and down on the guide-rods *d* and *d*<sup>1</sup>. From the upper side of this bar two flexible or jointed standards *e* and *e*<sup>1</sup> project, which are pivoted to the inner ends of small balance beams *f* *f*<sup>1</sup>, whose fulcra are on arms depending from the beam P, which connects the standard Q, which support the harness. The lower series of needles *b* rest upon a second cross-bar R (which is guided in the same manner as bar O). This bar R is connected by link-rods *g* *g*<sup>1</sup> to the outer ends of the balance beam *f* *f*<sup>1</sup>. Under this arrangement, when one of the bars with its series of needles is depressed, the other will be simultaneously elevated. This elevation and depression is effected in this instance by connecting the lower bar R by means of link-rods *h* *h*<sup>1</sup> to the extremities of arms *k* *k*<sup>1</sup>, that project from a rock-shaft S, which derives motion from a cam T on the cam-shaft *j*, which cam is of peculiar construction.

This cam is of the grooved variety, and its groove *l* in shape very nearly resembles the figure 8; so that a pin *s* on the end of the lever or arm *k*<sup>2</sup> which traverses this groove, will give to the arm two reciprocating motions or vibrations for each revolution of the cam. This groove *l* in the cam is capable of being changed in form by means of a pair of hinged shutters or gates *m*, so that the pin *s*, after traversing one half the figure 8, will pass over by a cross groove *n*, and retrace its path through

the same half of the figure instead of traversing the other half. When the cam is thus made to pass by or skip one half of the groove  $l$ , the arm  $k^2$  only makes one vibration to one revolution of the cam-shaft. The vibrations of the arm  $k^2$  are made to vary, so as to give a variable motion to the needles from and towards each other, for a purpose that will be hereafter explained.

The journals  $o$   $o^1$  on which the gates  $m$  turn, extend through the cam to the side of a rod  $p$ , so that the gates may be simultaneously opened and closed. One of the cranks is fitted with a pin  $q$ , which under certain circumstances strikes a spiral guide or cam  $r$  on the end of a lever  $r^1$ , which, by its peculiar shape, operates to turn the cranks about  $60^\circ$  of a circle, more or less, so as to open and close the gates  $m$ , and thus vary the shape of the groove. When the lever is turned so as to bring the guide  $r$  without the range of motion of the wrist-pin  $q$ , the cam-pin  $s$  traverses the whole groove  $l$ ; but when the groove is brought within the range of motion of the pin  $q$ , the latter runs on it, and opens the gates, which are closed immediately after the passage of the pin  $q$  round the guide by the spring  $p^2$ , which bears on one of the cranks or their connecting-rod, when the cam-pin only traverses the half groove  $l$ . The guide-rod  $r$  is moved into and out of the range of the revolution of the crank-pin  $g$ , by means of the joint-action of a cam  $u$  on the cam-shaft, and a cam  $v$  on the side of the ratchet-wheel  $w$ , by which the cloth-beam is turned to wind up the cloth as fast as it is woven. The cam  $V$  on the ratchet-wheel is a segment of a ring of about seven-eighths of a circle. The office of this annular segment is to hold down one arm  $t^1$  of a bell-crank  $T^1$ , which holds the other arm  $t$  in a position more remote from the ratchet-wheel, than if the arm  $t^1$  were not held down. This holds the front extremity of the lever  $r^1$  towards the middle of the loom, and keeps its opposite end with the guider out of the range of the crank-pin  $g$ , and the pin  $y$ , projecting from a branch arm to the guide, out of the range of the cam  $U$ .

When the space between the ends of the annular segment  $V$  is brought over the arm  $t$  of the bell-crank, a spring  $w$  acting upon the arm  $t^1$  will pull it towards the ratchet-wheel, and cause the other arm to rise and enter the notch or space between the ends of the segment. This will throw the front end of the lever  $r^1$  towards the ratchet-wheel  $W$ , and move its opposite end towards the cam, bringing the guide-screw  $r$  within the plane in which the crank-pin  $g$  turns and the pin  $n$  within the plane described by the projection  $u^1$  of the cam  $U$ , so that the gates  $m$  in the grooves  $l$  of the cam will be opened to allow the cam-pin to traverse one part of the groove, and then cross back and traverse it again, making a single vibration of the arm for one revolution of the cam, instead of allowing the pin  $s$  to pass round both ends of the groove and give two strokes or vibrations to the arm for one revolution of the cam. The arm  $t$  remains in the space or notch  $v$ , except for an instant during each revolution of the cam  $U$ , when it strikes the pin  $u$  in passing, and, turning the lever  $r^1$ , withdraws the arm from the notch for an instant, which will permit the ratchet-wheel to turn if the requisite number of weft-threads have been woven into the roll to make a transverse stripe of plain cloth of the width required,



which in the example of cloth represented in the drawings is five west-threads.

The ratchet-wheel *w* is turned and the cloth wound up, by means of a ratchet-arm *x* on a vibrating lever *X*. This lever is bent at the point, so that a portion of its outer end is inclined to the radius of arc in which the lever turns. This inclined end of the lever passes between a pin *y* projecting from the side of the sword of the lay, and another pin just above it, which projects from the side of an arm *z*; so that when the lay moves forward to beat upon the west, the pin *z* will press against and slide along the upper side of the inclined part of the lever and depress it, which will have the effect of pushing forward the ratchet and turning the wheel *W*, which turns the pinion *Y*, that gears into a wheel *z* on the cloth-roll *C* and winds it up. On the return back of the lay, the pin *y* will strike and slide along the under-side of the inclined part *x*<sup>1</sup> of the lever, elevating its inclined end and depressing the opposite end, which will pull back the ratchet, ready to be again pushed forward to turn the wheel *w* and the notch on the next forward stroke of the lay.

The arm *z* projects down from a shaft *z*<sup>2</sup> on the back of the lay, which rests in bearings in brackets *z*<sup>3</sup>. Another arm 2 projects upwards from this shaft *z*<sup>2</sup>, and is jointed to a bar 3 on the lay, to which the reed is attached. This reed-bar 3 is constantly pressed forward by two springs 4 on the back of the lay, and when the west-thread is beaten up, the reed will yield and press these springs back; which protects the web from being beaten up too forcibly by the reed, and also insures its being beaten up equably, provided the cloth is taken up at the same speed with which it is woven. This take-up is insured by making the yielding of the reed wind up the cloth. This is done by the bar pressing the arm *z* back, when the reed strikes up the west. The resistance of the west to being beaten up, turns the arm *z* with its pin forward, and causes it to turn the lever down; if the reed should not be forced back, the pin 5 would remain so far back of the inclined end of the lever *x*<sup>1</sup> that it would not press it down on the forward movement of the lay, and therefore, on that beat no winding up would take place, although a west-thread would be put in. Now, this will render the explanation of the unequal feed easy.

Where the warps are twined together, the west-thread cannot be beaten nearly so close together as where the warps are not twined; therefore, whenever the arm *t* of the lever *T*<sup>1</sup> drops into the notch of the cam *V*, and the twisting of the warps ceases, the reed will meet with less resistance in beating up the west, and but little if any winding up of the cloth will take place until a sufficient number of additional west-threads are thrown across to compensate the twining, which in the example of cloth shown in the drawing is five picks, when the feed will be resumed and the notch of the cam turned past the arm *t*, while the latter is withdrawn by the cam *u*, as hereinbefore described, and gauze will again be woven until the notch of cam *V* again comes round to the lever and suspends the twining. The needles for twisting the warp are of two kinds: one *a*<sup>1</sup> and *b*<sup>1</sup>, with long eyes or mails; the other *a* and *b*, with short eyes. Those with short eyes are designed to move the warp-threads back and forth whenever they move, while those with

long eyes are designed to move the warps in one direction only, and to move freely over the warps in other directions without moving them.

The eyes of these needles are at a short distance from their ends, and the end from the eye outwards is beaten into the form of a thin wedge, and bent as represented, while the shank of the needle is round or of any other suitable form. These needles are fastened, by the end most remote from the eye, to a stock or bar, so that each series of needles with its stock resembles a comb. The needle-bars, or stocks, have a series of equi-distant holes set out for the needles; and a sufficient number of the long-eyed needles are set in at one end to make a strip of plain cloth of the required width for selvages. Next, a series of short-eyed needles are placed in the stock, omitting one hole adjacent to the long-eyed needles, for the purpose of permitting the lengthwise stripes to be woven in the web without crossing the thread. The number of short-eyed needles thus placed must correspond to the number of meshes required in the stripe of gauze. Next, a long-eyed needle is inserted; then a space of one hole is left, and another series of short needles are inserted; and so these operations are repeated until the comb is complete. The upper comb of needles should be commenced to be inserted at the opposite end of the stock from that at which those in the lower comb are inserted, in order that the long-eyed needles may be placed at opposite sides of the spaces in the two combs.

Instead of bending the points of the needles, they might be made straight; and those of one series inclined towards those of the other series, so that their tapered points might overlap, as they do when bent. The stock of the lower series has a lateral as well as an up-and-down motion, and the object is to carry the threads which pass through the eyes of those needles alternately to the right and left of the threads which pass through the eyes of the upper series of needles, preparatory to moving them up and down to form the shed. This gives the twist between the warps. This lateral movement of the needles takes place while they are at their lowest position with the two series of warp-threads separated to form a shed, and preparatory to being raised; and it is effected by means of a spring-lever *i* vibrated by a cam *j* or groove round the surface of a cylinder that runs to the right and left alternately, in which groove a pivot traverses that projects from a vibrating treadle *l*, to the front end of which the lever *i* is connected. The lateral motion of lower needle-stock is limited by an arm *6*, which projects down from it between two brackets *f*, having adjustable set-screws to limit these vibrations of the needles.

I *claim*, first, intertwining the warp-threads in the manufacture of gauze-fabrics, by the employment of needles having a compound motion, substantially as described.

2d. Constructing the needles for working the warps with flat or thin and crooked ends, substantially as described.

3d. The arrangement of the needles in two series, and giving to one or both series a compound lateral and longitudinal motion, to inter-twist the threads which the two carry, and at the same time open a shed for the insertion of the weft-thread, substantially as described.

4th. The method described of working the needles so as to cause

them to raise and lower, and intertwine the warps, alternately with simply raising and lowering them, to adapt them to weaving gauze and plain fabrics alternately.

5th. The combination of the needles and heddles, operating automatically, substantially as described, so as to form a web of reticulated bars or strips of plain fabric with the spaces between the bars or strips filled with gauze.

6th. The combination of the yielding reed 3, the lever with the pin 5 on its lower end, the pin *y* on the sword of the lay, the ratchet-lever X, with its double inclined planes X<sup>1</sup>, for the pins to act upon, and the ratchet-wheel W, with the cloth-beam, for the purpose of winding up the woven fabric at a variable rate, substantially as set forth.

7th. The combination of the mechanism for winding up the woven cloth with the cam U, and the intermediate devices for the purpose of effecting the requisite changes in the variable cam T.

8th. The variable cam T, for the purpose of changing the operation of the needles, as set forth, to adapt them to weaving plain and gauze fabric, alternately set forth.

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No. 12,593.—DAVID S. HARRIS.—*Improvement in Looms*.—Patented March 27, 1855. (Plates, p. 73.)

D, shuttle-guard secured to the lay cap *b* by two staples *c c*, which serve as bearings. The rod D is cranked, to throw it forward over the shuttle race to enable it to lay over the shuttle, (see figure 2,) and the end nearest the shipper E is bent backwards over the lay cap to form an arm *d*, to be connected by a light rod *e* with the longer arm of lever *f*. The shuttle-guard is represented in figure 3 as being raised.

The inventor says: I do not claim the shuttle-guard, as I am aware that shuttle-guards substantially similar to that I have shown have been employed, attached fixedly to the lay, or, if movable, requiring to be moved by hand; and I do not confine myself to the use of a shuttle-guard constructed precisely like that described;

But I *claim* the connection of the shuttle-guard, in any way substantially as described, with the belt-shipper, in such a manner that when the loom is in gear, the guard may stand over the shuttle-race in such a way as to prevent the shuttle flying out of the loom; but when the loom is out of gear, the guard may be raised out of the way of the attendant, to enable threads to be picked out or drawn through the reed, or such other manipulations to be performed as may be necessary.

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No. 12,596.—WM. S. IRISH.—*Improvement in Looms*.—Patented March 27, 1855. (Plates, page 73.)

The harness Q is placed between upright guides Q<sup>2</sup>. The harness is provided with shoes P<sup>1</sup>, one face of each presenting an inverted incline to the cams P, which are so arranged, that in their revolutions they act immediately and simultaneously upon the shoes, and thus

raise alternately the different leaves of the harness, which latter fall back by their own gravity.

The inventor says: I do not claim the harness-frame, uprights, cams, or shoes;

But I *claim* the method of raising the harness by the immediate application of the cams to the shoes, or projections of the harness, substantially as set forth.

No. 12,630.—BARTON H. JENKS.—*Improvement in Looms*.—Patented April 3, 1855.—Ante-dated January 8, 1855. (Plates, p. 73.)

Whenever the shuttle-boxes C are lifted by the rod D, the movement of the sleeve Q up or down will force the wedge *d* of the arm P out of that notch *e* in which it may be (the notches *e* being formed on a rib projecting from sleeve Q); the wedge when forced out will be held by the rib between the notches, until the box is changed to the required position to present another shuttle to the action of the picker, when the wedge will drop into another notch, being forced therein by the spring M acting, through lever K, upon lever P. When the wedge *d* is forced out of the notches, the lower vertical arm *p* of lever P is moved outwards; this raises the horizontal arm P, and that in turn raises the horizontal arm K<sup>1</sup> of lever K, which moves the upper end of arm *k* outwards, thus permitting the spring-lever H to draw the picker outwards far enough to disengage it from the outer end of the shuttle, as shown by dotted lines in figure 2.

*Claim.*—The yielding-rest or support for the picker, arranged substantially as described, to break the sudden blow or concussion with which the shuttle impinges upon the picker, thereby preventing the filling of the cop from being jarred off and entangled, and relieving the picker from danger of being broken.

Also, separating or freeing the picker from the end of the shuttle by the same movement which shifts the shuttle-boxes, operating through a combination of levers, cams, and springs, substantially as set forth, or through levers, cams, or treadles, worked from any part of the loom.

No. 12,762.—J. G. MELVILLE and WILLIAM BRAYSHAW.—*Improvement in Looms*.—Patented April 24, 1855. (Plates, p. 74.)

Driving-shaft B carries two cams C and D, the one of which plays against lever E, and the other against lever F, both these levers having their fulcrum adjustable in slots *a a*. The vibrations of lever F impart (by means of pawl J and ratchet I) an intermittent motion to drum G and its belt, which carries the lags *d*, into which are secured the figuring wires *e*, these latter being of different lengths, as usual in such machines. The end of lever E vibrates lever K, the back end of which rests against the wires *e*; its front end takes either into the ratchet teeth of segment M, or into those of segment N, or it plays between the two without touching either of them, according as the back end comes to rest against the long or the short wires, or against the lags, which carry no wires. When the front end of lever K plays between

the segments, the rack-bar Q (to which is pivoted, in *r*, the lifting-rod R which carries the shuttle-boxes S) will be stationary; as soon as lever K operates upon segments M or N, the teeth *i* will respectively lift or depress the rack-bar, and consequently the shuttle-boxes. When either one of the segments is operating the rack, this rack will also turn the other segment simultaneously, so as to keep it always in proper position to catch the end of lever K, when it is changed by the action of the wires from one segment to the other. Spring *m* takes into recesses 7 in the rack-bar, and serves to keep it in the position into which it has been brought by the action of lever K, without offering too much resistance to allow the rack to be moved by the segments.

The shaft T carries at its opposite end a toothed segment W, which serves (as is apparent from figure 2) to move lifting-rod Y and shuttle-boxes U always in a direction opposite to rod R and shuttle-boxes S, by which arrangement the two sets of shuttle-boxes are made to balance each other in their motions.

The inventors say: We are fully aware that a forked bar, through a series of cog-gearing and ratchets, has been used for operating the shuttle-boxes of looms. This we do not claim;

But we do *claim*, in combination with a vibrating bar or lever, one or more segments M N, whose perimeters are partially provided with cog and partially with ratchet teeth, for the purpose of operating the shuttle-boxes of figuring looms through the intervention of a straight rack, so that we dispense with several of the pieces heretofore used, and thus cheapen and simplify the mechanism, as set forth; whilst the same ends are obtained as by the more complicated machinery at present used for this purpose.

No. 12,780.—LEROY LITCHFIELD.—*Improvement in Shuttles for Looms.*—  
Patented May 1, 1855. (Plates, p. 74.)

The pin *c*, when the spindle is in its operative position (figure 1), stands nearly in line with the spindle; and the spring *d*, by exerting its force above the pin *b*, throws up the heel *c* of the spindle against a bearing (the head of regulating screw *h* serving as such) in the body of the shuttle, and holds the spindle firm.

*Claim.*—The backward extension of the heel *c* of the spindle, as described, combined with the application of the spring *d* above the said heel, and above and in rear of the pin *b* on which the spindle moves in such manner as to hold the spindle in its operative position by throwing its heel upwards against a proper fixed bearing, substantially as herein described.

No. 12,781.—EZRA P. MARBLE.—*Improvement in Shuttles for Looms.*—  
Patented May 1, 1855. (Plates, p. 74.)

The operation of this improvement will be understood from the illustration.

*Claim.*—Attaching the catch C, which confines the bobbin or cop on the spindle to a pin *e*, which works perpendicularly through the spindle, and is acted upon for the purpose of throwing and holding the catch in operation by a spiral spring *g*, or its equivalent, and acted upon for the

purpose of throwing the catch out of operation by coming in contact as the spindle is raised with a plate D, or other fixed stop, the whole operating substantially as described, for the purpose set forth.

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No. 12,879.—JEREMIAH C. TILTON.—*Improvement in Temples for Looms*.—Patented May 15, 1855. (Plates, p. 74.)

The spring-hook A is formed of a thin metal plate, with its front end bent downward in the form of a hook, and serrated as seen at *a*. The spring cloth-bender B, consisting of a broad thin metallic plate, is applied to the underside of the shank of the spring-hook; and when the loom is in operation, the selvage of the cloth C passes between the two parts A and B. The cloth-bender B bends the cloth upward in rear of the teeth *b*, as shown in fig. 2, it serving to insure the seizure of the cloth by the teeth.

By means of set-screw D and slot E, the distance of the front end of B from the teeth can be adjusted.

G is the shoe for supporting the temple upon the breast-beam of a loom.

The inventor says: I lay no claim to the spring-jaw temple, made and operated as above described,\* nor do I claim the stationary or inflexible spur-plate temple, made of a rigid bar, provided with pins or points inclined at an angle to the direction in which the lay beats up;

But I do *claim* the combination of the serrated spring-hook and the spring cloth-bender as applied and made to operate together, substantially in manner as specified.

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No. 12,941.—JOHN AVERY.—*Improvement in the Shuttle Motion of Looms*.—Patented May 29, 1855. (Plates, p. 75.)

The picker-staff F is so arranged (see engraving) that its action on the shuttle (hung in the usual way) shall cease when it has reached a perpendicular position (see dotted line). If the picker-staff would pass further, it would (after passing the perpendicular line) begin to depress the heel of the shuttle, and elevate its forward end, so as to cause it to shoot out of the loom. But *before* reaching the vertical line, the tendency of the staff is to depress the forward part of the shuttle, which is desirable in weaving.

*Claim*.—In contradistinction from the operating of shuttles by a staff having a rectilinear motion, however produced, is the hanging of the staff upon a fixed pin or centre, and so vibrating it in regard to the shuttle, as that the shuttle shall take its forward motion from the picker-staff always, with its heel on the rise, and its point dipped towards the shed, by means substantially such as herein described, and for the purpose set forth.

\*See the inventor's specification.

No. 12,970.—DANIEL W. SNELL.—*Improvement in Looms.*—Patented May 29, 1855. (Plates, p. 75.)

Arm E plays loosely on shaft F, and rests on the eccentric D, on driving-shaft B. The upper end of arm E carries pawl H, working into ratchet-wheel I, which latter is fixed upon shaft F; bevel-gear K is also fast on shaft F, and gears into wheel L on shaft M, the end of which shaft carries the worm N that works into wheel O on the yarn-beam shaft C. The parts described constitute the driving-machinery. The regulating apparatus consists of the following parts: R is the regulating lever which rocks on shaft F, and one end of which rests against the periphery of the yarn on beam C; the other arm being bent around gear K, and jointed to one arm of rocker-lever S, that plays freely upon shaft F, and carries a slide T, that covers a portion of the periphery of ratchet I, and is interposed between it and pawl H. The lever R moves towards the axis of the beam as the warp-thread is unwound from the beam, and at the same time its shorter arm will be depressed so as to move slide T, thereby exposing more of the teeth of the ratchet to the action of the pawl, which latter has a constant reciprocating motion. Thus the extent of rotary movement of the ratchet-wheel will be gradually increased as the diameter of the yarn-beam increases.

*Claim.*—In combination with the yarn-beam, and mechanism for producing rotary motion of it, mechanism made to operate substantially as described, and governed in its action by the varying diameter of the yarn-beam itself, as specified; the same producing upon the yarn-beam a positive let-off or regular delivery movement, that is independent of, or not governed or controlled either by any positive take-up mechanism, or any mechanism, to regulate the delivery of the warps by tension, and rigidly hold them when the lay beats up against the weft.

No. 12,981.—JOS. WELSH.—*Improvement in Looms.*—Patented May 29, 1855. (Plates, p. 75.)

On the entrance of the shuttle within the box, the swell attached to the back of the box is forced out in the usual position, which swell, being in contact with the finger K, causes its lower end to lift the latch B; so that in the forward motion of the lay the said latch comes in contact with the stop A, and the latch being confined within the slotted projection of the rock-shaft C, this latter is caused to press back the projecting arm D, which is adjustably fixed upon the cylindrical stud E, thus causing a partial rotation of the said stud, which carrying with it the attached curved piece or picker-stopper I, allows the picker to recede in contact therewith the full distance required from the tip of the shuttle opposite thereto, before the shuttle-box commences to move; and when the shuttle is not in the box, the latch B, resting upon the lower part of the loose finger K, will sink with it sufficiently to pass beneath said stop A, so as to avoid any contact therewith; and thus the rock-shaft C, and consequently the picker-stopper I, is not actuated, and therefore the picker-stopper remains stationary, supporting the picker in position for receiving or throwing the next shuttle when required. Unless a

shuttle is in the box which may be opposite to the picker, no receding motion of the picker can take place; and also whenever a shuttle is in the said box, the picker-stopper I must always recede and allow the picker to follow, and thus be separated from the tip of the shuttle at every forward motion of the lay, and before the box commences to move; or, as it is sometimes necessary for only one shuttle to be used, and therefore no receding motion of the picker is required, the finger K has only to be shifted aside off the swell, and the picker will of course not be caused to recede. If the latch B is permanently elevated in the slotted end *b* of the rock-shaft, so as to come in contact with stop A at every forward motion of the lay, the picker-stopper will recede at every such forward motion whether the box moves forward or not.

The inventor says: I do not claim a yielding rest or support for the picker, either to break the sudden blow or concussion with which the shuttle impinges upon the picker, or for other purposes, as this device has been in use in England for some time, and also in this country.

Nor do I claim separating or freeing the picker from the end of the shuttle by the same movement which shifts the shuttle-boxes, as this principle has been discovered, and several devices for carrying out the same patented. (See patents granted to Barton H. Jenks, April 4, 1855, ante-dated January 8, 1855, and to Joseph Welsh, January 9, 1855.)

Nor do I claim holding the picker forward in movable shuttle-box looms, for the purpose of stopping the shuttle thereby, and causing the picker, after having stopped the shuttle, to recede, as and by the devices, or their equivalents, patented by James Eccles, January 23, 1855.

Nor do I claim the use of a shuttle-stopper as a picker-stopper, when the said stopper receives its motion from any part of the loom, and independently of the picker and shuttle-box, or either of them, as patented by me, October 3, 1854.

Nor, finally, do I confine my claim herein to the precise devices described and set forth, for conveying either the joint or several actions of the stop A and acting shuttle to the picker, as described.

But I *claim* actuating the picker-stopper by means of the shuttle which is required to be relieved from the picker, and so that the top or point of the same may be finally relieved as described, before the box containing it commences to move, substantially as described and set forth, or by means of the stud A in combination with the rock-shaft C, or its equivalent adjustable arm D and moving stud E, irrespective of the action of the shuttle upon the swell, substantially and for the purpose as described.

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No. 13,022.—WM. WHITESIDE and JOHN SHINN.—*Improvements in Looms*.—Patented June 5, 1855. (Plates, p. 76.)

One end of lever T (pivoted in the middle) works on the cam S, and the motion is communicated to levers C by means of rods V to open the warp shed evenly both ways. At the lifting and depressing ends of the levers C are attached straps Q, which pass over the rollers F and connect with the travelling rods E in the loops O, and as the shed closes, the rods E will bring the hooks *a* to their proper position to be ready for



the next movement of the pattern-roller. The pattern-roller communicates motion to vertical levers J, which work upon a centre pin attached to the loom frame, so that the pattern-roller presses the top of the levers when it is necessary to draw the harness down and unconnect the top hook and connect the bottom hook, and so on, as the pattern is changed, by which means we get a variegated shed. Also, providing the loom with levers L, hung on studs attached to the sides of the loom-frame: on one end is a cam, operated on by the swinging plate K attached to the lay, which operates only in the backward motion of the lay, and as the lay gives back, the plates K will come in contact with the cams on the levers L and depress them at that end and cause the other end to rise, which is connected to the picking-staff's pulleys by means of straps, and gives motion to the pickers in the usual manner. Also, providing the rod *g* in front of the reed and made to vibrate on arms which are attached to studs or pins fastened on the back of the lay in such a manner that the rod will rise and fall freely in front of the reed. The rod *g* is connected to the rod I, which is an ordinary protecting rod with the protecting finger H on it, by means of the connexions *y*. On the rod I is a finger *e*, under which is a cam *c* attached to the loom-frame; as the lay goes back, the finger *e* comes in contact with cam *c*, causing the rods I and G to rise for the shuttle to pass under the rod G; and should the shuttle fail to enter the box, it will arrest the downward motion of the rod G, and cause the finger H on the rod I to strike the lever P on the breast A, which will shift the driving-strap and immediately arrest the further advance of the lay. Also, providing the loom with the staple or loop M attached to the rod *r* and placed on the front of the lay near the mouth of the shuttle-box, and operated by the swell N. As the shuttle enters the box it presses out the swell, and the staple falls across the race of the lay; and if there be no weft-thread across the opening in the race of the lay, the staple M will fall through the opening and strike the balanced catch U, which is placed a little below the race, so as to let the shuttle pass over it. If the thread is broken or the bobbins exhausted, the staple M will press the catch under the arm of the rod I at the connexion *y*, and cause the finger H to strike the lever P and stop the loom, as before described.

The inventors say: We do not claim the controlling of the whole series of harness, or a part of them, by one lever at the top of the loom, and a number of levers at the bottom of the loom;

But we *claim* the combination and arrangement of one lever at the bottom of the loom with one at the top, in such a manner as to control any number of levers of harness that may be desirable, and open the warp shed evenly both ways, as described.

2d. We also claim the combination of the guides, travelling-rods, the rollers F F, and straps connecting the levers C C, for the purpose of bringing the hooks to their proper place in time to be ready for the next movement of the pattern-roller, as described.

3d. We do not claim the vertical levers for the purpose of opening the warp shed; but we do claim them in combination with the wires W for the purpose of actuating the hooks as described.

4th. We do not claim the swinging plates K K; but we do claim the

combination of the swinging plates K K with the levers L L, or the equivalent arrangement of the same, for the purpose of actuating the pickers, as described.

5th. We claim the rod G or its equivalent, so arranged with the rod I, that when the shuttle is arrested in front of the reed, it will cause the protecting finger H to strike the lever P and shift the driving strap, and immediately arrest the further advance of the lay, as described.

6th. The following we claim as an improvement on the machine of E. Burt, dated June 20, 1846, in which the said E. Burt claims the hanging weft protector on the race of the lay *itself*. The hanging of the loop on the race we do not claim; but we claim the balance-catch U, in combination with the loop M, and operated by the swell N, so that when the weft-thread is broken or exhausted it will immediately arrest the motion of the loom in the first forward motion of the lay, as described.

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No. 13,152.—JACOB SENNEFF.—*Improvement in Machines for making Harness for Looms*.—Patented June 26, 1855. (Plates, p. 77.)

A detailed description of this improvement would occupy too much space to be given in this report. Its principal features, however, can be understood from the claims and engravings.

*Claim*.—1st. The method of winding the heddles on the shafts *s*, by revolving the tube R, through which the yarn is supplied from the spool at its end, alternately around the shafts and flanges J<sup>2</sup> surrounding the stationary cylinders J, as they pass through said cylinders, and guiding the same by the followers or guides S at its ends, passing through the cylinder spaces or slots M, communicating with each other, and delivering the yarn to the shafts during the revolutions of the tube, from the end of the grooved radial swinging arm T, turning loosely on its end as described.

2d. The combination of the adjustable spring T<sup>3</sup> and radial swinging arm T with the tube R, for delivering and tempering the tension of the yarn, as described.

3d. The combination and arrangement of the bent rods U on the rock-shaft V, alternately operated upon by the tension of the yarn as it is laid on the shafts *s*; eccentric cam 4; slotted bar X, having a notch 3 on its side, and enlarged at its lower end; hub 10, with the inclined surface corresponding with the inclined surface of the enlarged part of the slotted bar; and the horizontal, longitudinal and transverse sliding rods 8 *a*; the whole forming the essential parts of the apparatus for stopping the machine, upon the breakage of the yarn, in the manner set forth.

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No. 13,186.—SAMUEL T. THOMAS.—*Improvement in Looms*.—Patented July 3, 1855. (Plates, p. 78.)

A stud at the end of lever S is worked by a groove on the cam R. The lever has its fulcrum at T, and has its front end fixed to one end of a flexible strap U, whose opposite end is fastened to the picker-staff V, which extends into and works the shuttle-box W. The strap U is to be sufficiently stiff to force the picker-staff backwards imme-

diately after each throw of the shuttle, and while the lever S is moving in a direction towards the staff. Thus this stiff, and still somewhat flexible, strap performs both the functions of drawing the picker-staff and of forcing it backward.

The forked lever Y is applied to a stationary projection  $c^1$ , fastened to breast-beam E, and a small pitman  $d^1$  is jointed to the upper arm of lever X, which pitman turns upon fulcrum  $e^1$ , and operates in connexion with a small rocker lever  $f^1$ , which works in lever X, and is composed of a shaft and two arms  $g^1 h^1$ . Arm  $h^1$  rests and works against an inclined plane  $i^1$ , formed on the under side of the gravitating arm of pitman  $d^1$ , the other arm  $g^1$  extending upward from the lever, and so that, when the catch-hook of lever Y falls downward, it may come into the path of movement of said arm, and thereby catch upon said arm, so as to cause lever  $f^1$  to be rotated, and to produce the depression of the front arm of pitman  $d^1$ . When such arm is depressed and moved forward, it will be carried into contact with lever  $k^1$  of the shipper  $l^1$ , and will move said lever so as to force said shipper off the shoulder or notch  $m^1$  of its slotted guide-plate  $n^1$ . The helical spring  $o$ , fixed to lever  $f^1$  and lever X, operates so as to retract  $f^1$  when X moves backward. The gravitating arm of  $d^1$ , when relieved of the pressure of  $f^1$ , will fall and raise the front arm of the pitman entirely above the lever  $k^1$ , by which the shipper is actuated. Thus the only strain upon the catch-hook of Y is that which is just sufficient to move rocker-arm  $f^1$  and the pitman.

The yarn-beam F is furnished with friction pulley  $p^1$ . One end of cord  $r^1$  is fastened to lower end of lever  $s^1$ , which latter is suspended at its upper end. The other end of the friction cord is attached to pin  $t^1$ , which slides through ear  $u^1$ , extending from lever  $s^1$ . The helical spring  $v^1$  serves to tighten the friction cord. The lever  $s^1$  rests against spring  $x^1$ , so as to allow the yarn-beam to turn a little, and accommodate itself to strain or draught, produced by the beat of the lay or the springing of the harnesses.

Figure 2 represents a front view of the left end of the loom. Figure 1, a plan of the same. Figure 3, an end view of the same. Figure 5, a cross section of the loom.

The inventor says: I *claim* the improvement of working the picker-staff in opposite directions, by means of a flexible staff, having sufficient stiffness to move said picker-staff backward, when said strap is moved by a lever, substantially as described.

I also *claim* combining with the operating lever X and the forked lever  $y$  of the stop-motion, a lever or pitman  $d^1$  and a tripping or rocker lever  $f^1$ , or the equivalent thereof; the same being for the purpose of operating the lever of the shipper, and relieving the forked lever  $y$  of strain, as specified; the said improvement enabling to be used a forked lever  $y$ , of great lightness and delicacy of construction, and capable of being operated by the finest qualities of weft and thread.

I do not claim applying a friction pulley and band to the yarn-beam; nor do I claim sustaining the warp by means of a guide roller supported by upright levers, operated with weighted levers, by two sectors and gears, and for the purpose of maintaining an equality of tension on the warp during the weaving operation;

But what I do *claim* is, arranging and combining the friction pulley  $p^1$ , the band  $r^1$ , the levers  $s$ , and spring  $X^1$ , or its equivalent, so as to operate together, and with respect to the yarn-beam, substantially as specified.

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No. 13,187.—SAMUEL T. THOMAS.—*Improvement in Looms*.—Patented July 3, 1855. (Plates, p. 78.)

Each of the harnesses  $H$  is supported by four cords,  $I\ I$ , two of which extend vertically and are made to pass over two pulleys,  $K^1\ K^1$ . From thence the cords are united to the upper end of one of a series of rocker-levers  $L$ ; the lower arm of  $L$  being fastened to two other cords,  $I^1\ I^1$ , which pass under pulleys  $K^2\ K^2$ , and up to the lower part of the harness  $H$ . Thus the harnesses are confined to a vertical motion when rocker  $L$  moves upon its fulcrum  $M$ . The lifter  $R$  is operated by elevating bar  $S$  and depressing bar  $T$ , attached to vertical sliding-rods  $V$  and  $W$ , and the lifter moves the segment  $O$  and (by means of groove  $a$  and arm  $N$ ) the rocker  $L$ . The shorter arm of each of levers  $f$  is made to rest against each of lifters  $R$ , (by means of weight  $h$ ,) and joins  $i$  on the longer arms of  $f$ ; these are operated upon by a Jacquard prism  $k$  and rotating pattern-card chain  $l$ , which (prism and chain) are moved up and down by proper mechanism, so as to carry them either towards or away from the levers, as occasion may require. The prism, chain, levers, lifters, segments, and rocker-levers, serve to regulate the movements of the harnesses.

Each set,  $G$ , of movable shuttle-boxes is sustained upon rod  $a^1$ , which slides freely up and down, and is connected to lever  $c^1$  by link  $b^1$ ,  $c^1$  being jointed at its rear end to lever  $d^1$ , to which latter vertical movement is imparted by star cam  $f^1$ , upon a long shaft  $g^1$ . Between levers  $c^1\ d^1$  is a wedge  $h^1$ , affixed to slide-bar  $i^1$ , which slides freely in bearings fixed to lever  $d^1$ . Against a projection from the inner side of bar  $i^1$ , a stud extended from a lever  $m^1$  or  $n^1$  is caused to bear one of these levers, viz:  $m^1$ , or that situated at the one end of the loom, turns freely on shaft  $o^1$ ; the other  $n^1$ , at the other end of the loom, being affixed to said shaft. Thus one lever operates independently of the other.

The above-described machinery not only causes each series of shuttle-boxes to be operated independently of the other, and so that it may be moved to any desirable extent, while the other is either stationary or put in movement, but it serves to cause either of the series of shuttle-boxes to be moved (when necessary) double the distance of the other in the same length of time. This latter movement of either series of boxes is produced by its star cam  $f^1$  and wedge  $h^1$  over the same; the wedge, during the time the cam is elevating lever  $d^1$ , being moved between levers  $d^1$  and  $c^1$ , over it, so as, in connexion with the star cam, to produce a compound movement of lever  $c^1$  and the series of boxes connected with it.

On main driving-shaft  $B$  is a fly-wheel  $w^2$  capable of free rotation thereon. The friction clutch-wheel  $v^2$  is fixed firmly to the shaft  $B$ . When the fly is driven against and over the conical periphery  $w^2$  of wheel  $v^2$ , the fly will revolve with the wheel  $v^2$ . Shaft  $b^2$  of shipper  $s$  is connected with rocker-lever  $z^2$  by means of rocker-lever  $d^2$ , and so

that, when the shipper moves towards its holding-shoulder  $e^2$ , it shall cause the detached fly to be moved towards and over the friction-wheel  $v^2$ , as described; a spring  $f^3$  upon the shipper-shaft serving to produce a contrary movement of the fly when the shipper is thrown off its shoulder.

By means of the above-described arrangement of a fly or balance-wheel, the loom (whenever it is set in motion) can be started with a force sufficient to throw the shuttle with certainty across the race-beam. This fly can also be separated from the driving-shaft just prior to a stoppage of the loom, in order to relieve the loom of the momentum of the fly. The friction-clutch prevents the momentum of the fly from straining or doing injury to the mechanism set in operation by it.

To the periphery of  $v^2$  a friction brake  $g^3$  is applied, provided with a lever-latch  $h^3$ , which turns horizontally on or in the brake as a fulcrum, and is jointed to lever  $i^3$ , whose lower bifurcated arm straddles a toe projecting from the shipper-shaft. When the shipper is thrown off its shoulder, the hook of latch  $h^3$  will be moved up against the side of wheel  $v^2$ , and will catch upon stud fixed upon the said side of wheel  $v^2$ . Thus the loom will be prevented from making a false pick, immediately after the filling-fork or weft-stop motion has been put in operation.

The left-hand half of figure 2 is represented as a section.

*Claim.*—Combining with each rocker-lever L and the lifter R thereof, an arm N, cam  $a$ , and sector O, or the equivalent or equivalents thereof, the whole being applied together, and made to operate in the manner essentially as specified.

Also, combining with the series of lifters R R and the pattern prism K a series of bent levers  $f f$ , or their equivalents, and imparting to the pattern prism vertical or up-and-down movements as described, the same being to produce advantages as stated.

Also, when the upper and lower sets of cords of a harness are supported by pulleys as described, applying both said upper and lower sets of cords to one and the same end of a lever operated by a cam, having a continuous rotation as described.

Also, combining with the star cam and lever, for moving a set of shuttle-boxes, a mechanism, substantially as described, for imparting an accelerated movement to the set of shuttle-boxes as explained, the said mechanism consisting of the additional lever  $d^1$ , the movable wedge  $h^1$ , and its operative mechanism as described.

Also, the above described arrangement of a Jacquard, the wires thereof, the impelling pawls, and the star cams and their shaft, whereby one Jacquard apparatus, applied at one end of the loom, is made to operate two independent shuttle motions of the loom, as explained.

Also, so applying to the main shaft a friction clutch-wheel and a fly or balance wheel, that the fly may run loosely upon the shaft, and be capable of being moved either towards or away from the friction clutch, in combination with so connecting the fly with the shipper that the said fly shall be moved laterally during and by the movements of the shipper, as described.

Also, combining with the friction-wheel and the shipper, as described, a brake mechanism for throwing said brake  $g^3$  into and out of opera-

tion, as specified, such mechanism consisting of the lever-latch  $h^3$ , the projection 13, and spring  $f^3$ , as specified.

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No. 13,217.—RUFUS M. DILL.—*Improvement in Looms*.—Patented July 10, 1855. (Plates, p. 79.)

A is the shuttle-stop, attached loosely to the arm B of the lay, by the screws  $a$  passing through slots  $b$ , to allow it to slide or traverse by the action of the stud  $c$ , travelling in the diagonal groove  $d$  as the lay beats back and forth, the top of the groove  $d$  being the arc of a circle described from the centre of the rocker H. The vertical arm of stop A is formed with two projections D D, projecting into the shuttle-box F the same distance as the picker C, and at such distance apart that when the bottom shuttle is in the position to be acted upon by the picker C, the top shuttle will be horizontally in line with the top projection (see fig. 1); and when the top shuttle is in the position to be acted upon by the picker, the bottom shuttle will be in line with the bottom projection. The face of the projections stand forward over that part of the stop that comes in contact with the picker, the width of the picker bringing the face of the projections vertically in line with the face of the picker (see fig. 2); thus, at each beat of the lay, making sure that both of the shuttles E E are forward in the shuttle-boxes to the extent of the forward traverse of the stop A, and the points of the shuttles, one directly over the other, rendering it impossible to get either shuttle far enough into the boxes to catch against the picker when the boxes change, whether they be thrown into the box by the action of the opposite picker, or placed in by hand after threading.

The inventor says: I am aware that a slotted lever, operated by a pin in the lay, has been used in looms with movable shuttle-boxes, to hold the picker forward, and thereby stop the shuttle, and therefore I do not claim such; but I claim a sliding bar attached to the lay, having projections adapted to each shuttle of a series at its outer end, and actuated from the inner end by a groove attached to the frame of the looms, substantially in the manner and for the purpose described.

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No. 13,284.—EDWARD WOOD.—*Improvement in Looms*.—Patented July 17, 1855. (Plates, p. 79.)

One end of link B is attached by a joint to the frame at  $g$ , and its other end is attached in like manner to the lower end of lever A, pivoted in  $a$ . When the lay is drawn back by the crank-shaft to its greatest distance, the lever A is thereby forced into a vertical position (see figs. 1 and 2); and when the lay is thrown forward by said crank-shaft to its greatest distance, the upper half of lever A is forced to an outwardly inclined position (see figs. 3 and 4). In position figs. 1 and 2, the picker  $c$ , in close contact with the upper end of the rigid unelastic lever A, receives the blow of the movable shuttle-box. In position figs. 3 and 4, the lever A has receded to allow the picker to recede entirely from contact with the point of the shuttle, which has been stopped; and the motion of the box, up or down, (which is re-

quired only during the forward position of the lay,) is thus permitted without the possibility of any interference from the picker.

The inventor says: I am aware that several combinations of devices are in use for the purpose of operating an elastic or yielding stopper for the picker of looms, and also for allowing the free motion of shuttle-boxes, which are dependent for their action either upon the shuttle itself or upon the motion of some part of the loom. I therefore do not claim the application of the principle for arresting the picker by a combination of devices, arranged so as to make the stopper elastic or yielding to the blow of the shuttle, and allowing the free motion of the shuttle-box up and down; but I claim the rigid or non-elastic picker-stoppper A, constructed and arranged upon the lay substantially as described, and operated by means of the rigid link or curved rod B, or its equivalent, when in connection with the said stopper A and the frame of the loom, substantially and for the purposes set forth.

No. 13,322.—HORACE T. ROBBINS.—*Improvement in Shuttle Guides for Looms*.—Patented July 24, 1855. (Plates, p. 79.)

The object of this improvement is to prevent the shuttle from flying out. When the shuttle rises up so as to come in contact with the pulleys, the point of the shuttle will always strike below the centre of the pulley, and consequently it gives it a rolling motion and guides it into the box.

The engravings exhibit only one-half of the guide A with the pulley B, the other half being exactly alike;  $xx$  is the centre line.

The inventor says: I do not now claim the shuttle guide A, as that was secured to me by patent granted September 14, 1862; but I now claim an improvement on said former invention, which consists in furnishing the shuttle guides with pulleys B B, or equivalents, substantially in the manner and for the purpose described.

No. 13,382.—JOHN BROADBENT.—*Improvement in Looms*.—Patented August 7, 1855. (Plates, p. 79.)

The plates E E<sup>1</sup> are pivoted at  $b$ , so that they may be capable of a limited swinging motion back and forth, for the purpose indicated in the fourth part of the claim, the rods  $b^2$  attached to the plates forming a guide for the stocks F F<sup>1</sup>, to which the hooks are secured. The filling-hooks  $c$   $c$  take the filling-thread through the first half of the warp, holding it extended across them for the hook  $d$  of the opposite set of hooks to take it off and draw it through the remainder, when the said hooks pass one another in the centre of the cloth and return again; the hooks with their stocks are attached to the picker-staves G G<sup>1</sup>, which work through slots in E E<sup>1</sup>.

Supposing the lay has closed the last shot, one of the levers  $e$  or  $e^1$  (for instance  $e$ ) strikes the bar J, and throws forward the board E and filling-hook stock F, and the lever  $g$ , immediately escaping from the notch  $h$ , falls into place to secure the filling-hook stock in its forward position; at the same moment the Jacquard machine comes into op-

ration and raises a thread of filling at the right-hand end of the loom, as shown in figure 1, one end of the thread being fast to the selvage. As the lay begins to move back, the cam  $K^1$  throws down lever  $L$ , and thereby brings down tending-fork  $j^1$ , which places the thread across the front of the filling-hook stock  $F^1$ . By this time the lay has been moved about half-way back, and the cams  $H H^1$  throw the picker-staves and filling-hooks towards the centre of the web. As the hooks advance towards each other, the right-hand hooks  $c c$  take the thread as shown in figure 1, and, with the thread extended between them, carry it far enough into the shed for the point of the hook  $d$  to pass it. When the staves have carried the filling-hooks as far as necessary, they strike the lower ends of the levers  $g g^1$ , and in so doing throw the end of  $g$  opposite to notch  $h$ , and thus allow the board  $E$  and stock  $F$  to fall back. The return of the filling-hooks and drawing through of the filling is completed some time before the lay beats up. Just as the lay beats up, the wedge-piece  $p$  of picker  $G$  strikes the tongue  $q$ , and gives the stock  $F$  a sufficient movement for its hook  $d$  to unhitch itself from the filling-thread before the lay falls back again.

Figure 3 represents a plan of only one end of the loom, the other end being similar in construction.

*Claim.*—1st. The insertion of the filling-thread by means of two hooks or sets of hooks, arranged to operate one on each side of the cloth: one to carry the filling-thread to the middle of the shed, where it is met by the other, which takes the threads from the first and returns with it, thus drawing the thread entirely through the warp, substantially as described.

2d. The employment of the said two hooks or sets of hooks, each as a deliverer to give the thread to the other, and receiver to receive the thread from the other, alternately, as described, by which means a good and fast selvage is made on both lists of the cloth.

3d. The employment of two tending-forks  $j j$ , made in any form, and arranged and operated in any manner, substantially as described, to conduct the filling-thread into proper positions to be caught by the delivery filling-hooks.

4th. Giving the two filling-hooks or sets of filling-hooks, each in turn, a sufficient movement laterally to the path in which they move, to insert the filling, for the purpose of enabling one to pass the other in the shed to take from it the filling-thread, substantially as described.

5th. I claim giving the receiving-hook a sufficient movement toward the middle of the cloth, after it has drawn the filling through, and before the falling back of the lay, substantially as set forth, to disengage it from the thread of filling which it has just drawn through.

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NO. 13,413.—JAMES SMITH, assignor to HIMSELF and WM. BOTTERILL.  
—*Improvement in Temples for Looms.*—Patented August 7, 1855.  
(Plates, p. 80.)

This temple is provided with one or two pairs of toothed rollers,  $J J$ , the teeth of which stick into the cloth slightly, and as they are inclined outward from the centre of the cloth, the cloth is stretched and held uniformly as the cloth passes out over the cylinders of the loom.



The caps *m*, hinged at *O*, are readily lifted, which admits of getting at the rollers in the event of the bending or twisting of the pins. The temple, being attached to the yielding bar *h*, and at the same time pressing up against spring *b*, admits of easing off the lay-beat, and, reacting, returns the temple to its proper position.

The inventor says: I am fully aware that burrs, toothed and serrated surfaces, have been formed for many purposes; and knowing that a variety of wooden rollers, with pins inserted, have been used for rollers, I wish to be understood as disclaiming such devices, and instead confine myself solely to the following:

I claim the temple roller formed with solid raised conical-shaped pin-teeth, having a hinged cap to its case, all attached to a flexible rod *h*, in combination with the forked spring *c, d, d*, when adjustable in brackets *e, f, g*, the whole arranged substantially in the manner described, and constituting my improved temples.

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No. 13,571.—WM. V. GEE.—*Improvement in Looms for weaving Suspender Webbing*.—Patented September 18, 1855. (Plates, p. 80.)

The general features of this invention will be understood from the claims and engravings. A detailed description would occupy too much space to be given in this report.

I claim, 1st, the method described of forming button-holes, or other holes, in suspender webbing and other fabrics, by weaving one side of the hole continuously, from the weaving of the full width of the web, then running back the net the length of the hole, and proceeding with the other side of the hole.

2d. The employment for operating the harness of a sliding lifting-carriage *E*, furnished with a number of catches *a a*, corresponding with the number of leaves of harness, said catches being employed below the harness opposite the lifting-bars *c c* thereof, and being allowed to fall into the notches of the lifting-bars of their respective leaves of harness, or being thrown out by a corresponding number of levers *f f*, which are operated upon by a patent cylinder *G*, or its equivalent, substantially as described.

3d. The method of throwing off all the levers *f f* from the pattern cylinder at every stroke of the loom, to admit of the turning of the cylinder, by attaching all the said levers to a superior lever *H*, which is operated upon by inclined surfaces *i j*, upon the connecting-rod of the lifting-carriage *E*, substantially as described.

4th. The mechanism by which the suspension of the operation of that part of the harness which carries that part of the warp which forms the side of the hole which is first woven is effected, consisting of a rock-shaft *s<sup>1</sup>*, carrying catches *s s* to hold up the harness, and a finger lever *t*, attached to the lifting-carriage *E*, to act on a cam *s<sup>2</sup>*, or its equivalent, on the said rock-shaft, the said finger-lever having imparted to it, by suitable means, a vibrating or side-to-side movement, at the termination of the weaving of each side of the hole, to actuate the rock-shaft to throw the catches *s s* in or out of operation, substantially as described.

5th. The method of returning the pattern cylinder to the position for commencing the pattern after the weaving of the hole, by fitting the

cylinder loosely to its shaft, and furnishing the end of the shaft with a fixed slide R to receive a movable slider R<sup>1</sup>, which is raised at intervals by a lever, operated by a cam on a shaft U, parallel to and geared with the cylinder shaft, and at the end of the formation of the hole suddenly falls over a step on the cam and throws down the slider, and thereby causes a fork z<sup>1</sup> on the cylinder to operate on a stud z<sup>2</sup> on the cylinder, and return it positively to the required position, substantially as described.

6th. Forming those dents of the reed which correspond with that part of the warp which forms that side of the button-hole which is to be first woven with a backward crook n, above or below the plane in which the closing of the sheds takes place; in order that, by raising or lowering that part of the warp of which the first woven side of the hole is composed, the said woven side may be allowed to go back the length of the hole, without obstructing the lay, in weaving the other side of the hole, as fully set forth.

7th. I claim the method of liberating the take-up roll from the pawls m<sup>2</sup>, m<sup>3</sup>, to allow the backward movement of the web, and re-engaging it with the said pawls, by means of the lever M, the hooked-bar g, the catch g<sup>1</sup>, and the arm r, all operating substantially as described.

8th. I claim fitting the arm r loosely to the take-up shaft, and engaging it, by means of a pawl r<sup>1</sup>, with the ratchet, and providing a fixed stop r<sup>2</sup> to arrest the said arm at a suitable point, whereby the take-up shaft is caused to carry the said arm r the requisite distance from the catch g<sup>1</sup>, corresponding with the length of the button-hole, and then the arm to become stationary till the ratchet is liberated, and then to return with the ratchet, to throw out the catch g<sup>1</sup>, substantially as described.

9th. The application, in connexion with each of the let-off rolls o o, of a brake-lever o<sup>1</sup> and a spring-lever g. The said levers operating, as described, to control the let-off, and the spring-lever acting as a backward take-up to take back the web, to weave the second side of the hole, substantially as described.

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No. 13,724.—JAMES O. LEACH.—*Improvement in Looms*.—Patented October 30, 1855. (Plates, p. 81.)

Four harness frames (each one working independently of the other, and not in pairs, one ascending and the other descending) are pressed upwards by springs, and moved downwards by levers E G H I, to which they are connected. These levers are pivoted to the rear beam K of the loom-frame, their front ends being guided by a grooved frame attached to front beam L. The treadles are worked by cams e f g h i k on the shaft M: figure 2 representing them in the position to execute one portion of the work; figure 3, after a change has been made to perform another part of the work, as indicated in the first part of the claim. The cams j and k are immovable on the shaft, but e f g h are attached to a sleeve sliding on the shaft a distance a little more than the thickness of a cam, in order to bring the friction-rollers attached to the

treadles under their proper cams. The machinery so shifts the cams that the harnesses change their positions at proper times—some of them being up, some down, so as to weave bags and solid pieces alternately. When the cloth is taken from the loom, it presents in its length a series of two bags together, separated from two others by a solid web, so that, by cutting the fabric across through the centre of the hollow part, two bags are the result; or by cutting across through the solid part, and then cutting across through the lengthwise centre of the web, two bags will be produced.

The cams are shifted by means of lever N, which latter is worked by connecting-rod P and eccentric R, the shaft of which eccentric is supported by brackets extending from beam K. The bevel wheel S at the bottom of said shaft is partially toothed, and receives motion from main shaft M by means of gearing W V T. The wheel S has three teeth left out both sides of the centre, so that whenever wheel T has turned S nearly half round, it ceases to move it further for want of a cog to act upon; just as it arrives at this point it brings a cam projection X on the surface of the shaft against a stout spring Y, which presses upon its inclined face in a way to force it forward in the direction of its previous motion, and carry the first cog beyond the vacancy and within reach of wheel T. The cogs, however, are prevented from taking into each other by a projection *y* on the shaft, a similar one being on the opposite side of the shaft, a little lower down, against which the end of the stop lever Z rests. The ends of lever Z receive motion around fulcrum *z* by means of horizontal cam *m* attached to worm-wheel *n*, operated by worm *p* on the shaft of ratchet *r*, which, in turn, is operated by pawl *t s* and lever *w* pivoted to the upright arm *q* of the lathe frame. When the cam *m* has raised the end of lever Z above stop *y*, then the spring Y presses the cogs of T and S into connexion, so as to carry wheel S half round and shift the eccentric and cam. When half round, lever Z drops, and the operation above described will be repeated. The successive stoppages of wheel S are to allow the cams to remain in their alternate positions the proper times to permit the weaving apparatus to complete its successive stages of work.

I claim, first, the combination of arrangement of the shifting-lever N, connecting-rod P, and eccentric R, operated by the gearings T and S, or their mechanical equivalents, substantially in the manner described, for the purpose of varying the movement of the loom harness or heddles so as to produce solid or tubular fabric with the same warp, and vary the solid or tubular weaving so as to produce bags of any desirable capacity.

The mechanism substantially as described for determining and regulating the intervals between the shift of the cams, viz: stops on the shaft of the eccentric, governed by a stop-lever, said stop-lever being operated by a horizontal cam, which is itself turned by a ratchet wheel, whose pawl is driven by the oscillating motion of the lathe, in combination with the partially-toothed bevel wheel.

No. 13,848.—L. B. JILLSON and GEO. SPARHAWK.—*Improvement in Bag Looms*.—Patented November 27, 1855. (Plates, p. 81.)

Wheel G turns loosely on shaft H, and has such a number of teeth as to make one revolution during the weaving of a bag. By the time the notch in disc I arrives opposite the spring pawl *p*, the pin *m* will have arrived in contact with finger *q*. After pawl *l* has entered the notch in I, the next descent of lever B<sup>1</sup> (the levers being worked by pitman D) causes the pawl to move the disc, independently of the wheel G, far enough for the pin *m*, acting on the finger *q*, to drive rod *r* and fork *t* to the left, (which fork *t* covers the ends of four of the slides,) so as to shift the position of the four slides *k*, which happen to be opposite to it, to be in readiness to regulate the opening of the shed to weave the bottom of the bag when they are severally brought into their operative position by the revolution of the cylinder. After passing their operative positions, these slides are severally shifted back again to the right hand by coming in contact with an inclined piece *u*.

The inventors say: We do not confine ourselves to the particular mechanism by which the rising and falling movement for the purpose of opening and closing the shed is effected, what we consider to be the important feature of our invention being applicable to many other lifting arrangements for opening and closing the shed;

But we *claim*, 1st, placing the two sets of studs of the pattern cylinder, for weaving the sides and bottom of the bag, in slides *k k*, fitted to the cylinder, to slide longitudinally thereto, substantially as described, so as to admit of the changing of the harness motion from weaving the sides to weave the bottom of the bag, or *vice versa*, by shifting the whole or any number of the said slides, according to the number of picks desired in the bottom.

2d. The combination of the sliding-rod *r*, having a fork *t* and finger *q*, with the notched disc I, carrying the pin *m*, the pawl *p* or its equivalent, the worm-wheel G, and the endless screw *l*, on the cylinder, all operating substantially as described, for the purpose of shifting the slides in the cylinder to change the operation of the harness.

No. 13,936.—ERASTUS B. BIGELOW.—*Improvement in Looms for Weaving Pile Fabrics*.—Patented December 18, 1855. (Plates, p. 81.)

The pile-wires *l* are formed with a head and eye on one end (see figure 6). The latch or hook *m*, for drawing the pile-wires, has a sliding motion on way *t*, towards and from the selvage S of the cloth C; the hook *m* has also a vibratory motion on the screw *o*, and is pressed towards the pile-wires by the spring *p*, and is prevented from swinging too far by the stop-pin *q*. When the hook comes into position figure 5, and as the bevelled end *r* strikes the head of the pile-wire *l* to be acted upon, the hook locks on to the straight part *s* of the eye; then as the hook recedes from the selvage S of the cloth C, it draws out the said pile-wire *l* (see figure 2, which represents it about half way out).

When the hook has nearly completed its outward movement, the carrier which is to receive the pile-wire from the hook and which is

represented in figures 3 and 4, comes into the position represented by dotted lines in figure 2, and the hook draws the head of the pile-wire into the socket of said carrier, and a bar  $y^1$ , forked at its end,  $a^2 a^2$ , rises up to receive the other end of said pile-wire as it is drawn from the cloth; then, when said carrier and forked arms are thus armed with a pile-wire, they move in unison back to the point where said wire is to be inserted in the shed of the warp; then the forked bar stops, and the carrier moves towards the selvage of the cloth, sliding the pile-wire upon the forked bar until the wire is fairly introduced into the shed; then the forked bar drops down to make way for the carrier, which completes the insertion of the wire, and moves forward with it to the face of the cloth, and holds it in position until otherwise secured.

*Claim.*—The employment of a latch or hook, for successfully drawing the pile-wire from the cloth, when said latch or hook is constructed and operated substantially as specified.

Also, in combination with said latch or hook, for drawing out the pile-wires, the apparatus which receives the outer or head end of the pile-wires from said latch or hook, and transfers them to the face of the cloth, when said apparatus is constructed and operated substantially as specified.

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No. 14,000.—GEORGE W. SMITH.—*Improvement in Looms for Weaving Wire.*—Patented December 25, 1855. (Plates, p. 82.)

The warp-wire having been secured in the carriage E at  $g$  and  $d$ , motion is communicated to the driving-shaft. The reed I of the loom is like that of other looms, but instead of being attached to a vibrating lay, it is secured in a carriage or lay I<sup>1</sup>, which works on horizontal ways I<sup>2</sup>, and is operated by levers J<sup>2</sup> and connecting-rods J<sup>3</sup>; and instead of having a direct movement back and forth to beat up the filling-wires  $v$ , it has two distinct movements as hereinafter described. When the lay I<sup>1</sup> is thrown back ready for its preparatory and least forward advance, the shed is open, and filling-wire is put in; the preparatory advance of the lay brings this wire to the position shown at  $v^1$  in fig. 1, ready to be operated upon by the crimpers, (consisting of two corrugated plates  $m m^1$ , with additional recesses 5, to receive the warp-wires at their points of intersection with the filling,) at the same time laying it parallel with the face of the reed, or square with the warp. As the lay retreats the crimpers commence closing, and after its retreat has terminated the lay remains stationary long enough for the crimpers to finish their operation and commence their opening; the final and most forward advance of the lay then takes place, the lay passing right through the open crimpers, and beating the crimped wire up to its proper place; the forward movement of the warp-carriage takes place during the final retreat of the lay at the early part of its next preparatory advance. The slacking of the warp-wires by the screws  $h h$  takes place during the final retreat, or at an early stage of the preparatory advance of the lay; the lateral movement of the crimpers takes place during the final advance and retreat of the lay, so that when the crimpers close upon the next filling-wire, which is inserted

and brought to the position of  $v^1$ , they crimp it to a form precisely the reverse of the last.

*Claim.*—1st. Giving the reed two movements, substantially as described; the first, for squaring the filling with the warp, and bringing it to a suitable position to be operated upon by the crimpers; and the second, to beat it up to its place.

2d. Giving the crimpers a movement laterally to the warp in opposite directions alternately, after the crimping operations, for the purpose of making them adapt themselves to the varying intersections of the successive wires of the filling and the warp.

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No. 13,752.—JOHN HARRIS.—*Improvement in Self-acting Mules.*—  
Patented November 6, 1855. (Plates, p. 82.)

The driving-shaft  $k$  is to have a continuous rotation in one direction. In consequence thereof, the two gears  $X$  and  $H$  and their shafts  $Y$  and  $G$  will be turned contrary ways. When bevel gear  $V$  is clutched to shaft  $E$ , such shaft will be rotated in one direction, and with a regular movement, and so as to produce a corresponding movement of the endless chain  $A$ . It is during this movement of the chain that the carriage of the mule is run out and the spinning of the yarn effected. When the chain is moved in the opposite direction, its movement is variable, to wit: it has first imparted to it a slow motion, and this while the faller of the mule is descending on the yarn. Next the chain has a quicker motion, until the carriage has nearly completed its inward course. During the remainder of the movement of the carriages the chain has a continued and quick decreasing speed, the object of which is well known. The said last three movements of the chain are effected by the barrel gear  $L$  and the eccentric cog-wheel  $M$ . The barrel gear, having a regular rotary motion, turns the eccentric cog-wheel with first a constantly decreasing speed, and next a constantly increasing speed. Affixed to chain  $A$  is a slider  $s$ , which slides upon rod  $L$ , the ends of which rod serve to operate the clutches  $b$  and  $b^1$ . As the slider  $s$  is alternately carried in contact with collar  $f$ , it produces the alternate shifting of the clutches  $b$  and  $b^1$ , the barrel gear  $L$  being unclutched with its shaft, while  $V$  is clutched to its shaft  $E$ , and *vice versa*.

The inventor says: I do not claim combining with mechanism for producing a regular backing-off movement of the carriage machinery not only for giving a slow motion to it during the first part of its running-in movement, or while the "fuller" is descending on the yarn, and a quicker movement afterwards, or while the carriage is running in; but, finally, a slower movement, decreasing to completion, of the extent of inward movement of the carriage;

But I *claim* the peculiar combination before described and applied to the endless chain, and for effecting such variable movement or running-in of the carriage, the same consisting of the driving-shaft  $G$ , the clutch apparatus thereof, the barrel-gear  $L$ , the eccentric gear  $M$ , and mechanism connecting the latter with the shaft  $E$  of the endless chain; the whole being arranged and applied substantially as specified to the mechanism for producing regular movement of the chain in a reverse direction.

No. 12,283.—HORACE W. PEASLEE.—*Improvement in Machines for washing Paper Stock*.—Patented January 23, 1855. Patented in England September 20, 1854. (Plates, p. 83.)

The nature of this improvement will be plainly understood from an inspection of the engraving.

The inventor says: I do not claim as new the revolving screen cylinder and stationary trough, with or without elevating hooks or lifters, arranged spirally or otherwise in the cylinder, for the purposes specified, nor yet, otherwise than as arranged and combined, the oblique curbs or pieces to direct the discharge from the cylinder, as such devices, differently arranged, employed, and combined, have before been used in ore-washing machines.

But I *claim*, in the washing of paper stock, the arrangement, substantially as shown and described, of the oblique curbs K, in continuous succession round the open discharge end of the revolving screen cylinder, and forming channels between them to conduct the stock continuously, as the cylinder rotates, beyond the discharge edge of the cylinder, when combined to operate together with elevating hooks *d*, within the cylinder, and serving to retain a copious supply of water in the cylinder for the proper washing of the stock, and to check the run of the stock through the cylinder to a speed in accordance with the conveying action of the cylinder or its elevating hooks *d*, as specified, to insure the full and regular action of the hooks on the stock, in the manner described, the whole operating together for the purpose as set forth.

No. 12,442.—OBADIAH MARLAND.—*Improvement in Rolls and Driers for Paper-making*.—Patented February 27, 1855. (Plates, p. 83.)

The object of this improvement is to produce a surface without blemish, the deposited metal being peculiarly adapted to give a superior finish to the surface of the paper, and to produce such roll or drier at a cost greatly less than that of the copper or composition rolls now in use.

The inventor says: I have spoken of copper as the material used for covering the rolls and driers, but I do not confine myself to the use of this metal, as zinc, and perhaps other metals, may be employed; and I do not claim the use of any particular metal for the purpose, neither do I claim the covering of one metal with another by means of galvanic or electric deposition; but I claim the method described of making paper machine rolls and driers; a metallic foundation of the requisite strength and thickness being made use for the body of the roll, upon which a surface of copper or other suitable metal is deposited by galvanic or electric action, for the purpose set forth.

No. 12,798.—MILTON D. WHIPPLE.—*Improvement in preparing Wood for Paper Pulp*.—Patented May 29, 1855. (Plates, p. 83.)

The wood, sawed into short cylinders F, is submitted to the action of a grind-stone A, (revolving on axle B,) to reduce it to pulp. The

relative position of the cylinders and grind-stone referred to in the second part of the claim, serves to preserve the fibres of the wood. The rack-bars R serve to constantly rotate the cylinders during the grinding operation, so as to present a very limited surface of the block to the stone.

*Claim.*—1st. In the process of preparing paper pulp from wood, first grinding the block upon the surface of a revolving stone or its equivalent, for the purpose set forth.

2d. Maintaining the block in such position with respect to the stone, that the fibres of the wood shall lie in the direction of motion of the stone, or very nearly so, for the purpose set forth.

3d. Rotating the block during the operation of grinding, for the purpose set forth.

No. 13,153.—WILLIAM ADAMSON.—*Improvement in Sand-Paper Cutting Machines.*—Patented July 3, 1855. (Plates, p. 83.)

The revolving blade L, in coming into contact with and passing by the edge of the stationary blade K, cuts the paper P, between the two blades.

*Claim.*—The employment of thin elastic blades L L<sup>1</sup> and K K<sup>1</sup>, of uniform thickness, so arranged that the revolving blade shall overlap slightly the stationary blade, in the manner and for the purpose substantially as set forth.

No. 13,412.—LOUIS KOCH, assignor to PETER B. SWEENEY and MICHAEL LACOUR.—*Improvement in Machinery for making Paper Pulp.*—Patented August 7, 1855. (Plates, p. 83.)

B are the feeding-rollers, and B<sup>1</sup> B,<sup>2</sup> &c., the stretching-rollers referred to in the claim.

*Claim.*—The combination of a series of rollers, increasing gradually in diameter and speed, in proportion as the wood or fibrous substance is extended or pressed out; the face or circumference of one of every pair of the extending rollers having a greater speed than the face of its corresponding roller, producing thereby a slight dividing or separation motion in connexion with the pressure upon the substance, which separates each fibre, without destroying the same, for the purpose of making pulp from wood and fibrous vegetable substances, in manner substantially as described.

No. 13,229.—SAMUEL PEARSON, Jr., and WM. H. GARDNER.—*Improvement in Rope and Cordage Machines.*—Patented July 10, 1855. (Plates, p. 83.)

Between the laying-frame A and the frame B there is arranged the lay-top K, which is a cone, having its external surface grooved longitudinally for the reception of the strands L M N, extending from the tubular nozzles z z of the flyers U V W. A central hole for the reception of the twisted cord is made through the plate or bar y, of the frame O; such hole having its axis in range with that of the laying-flyer



and the laying-top, whose smaller end is placed at a short distance from the bar  $y$ , or one sufficient to permit a rope R to be wound several times around the twisted rope S. Rope R has one end fastened to frame O, and is wound about the rope S and the laying-top, and has its other end attached to weight T, which latter draws the rope R closely upon rope S and the strands from the flyer, and forms, as it were, a flexible tube through which said rope is drawn, thereby preventing any unevenness of laying or twisting of the rope, and imparting to it a smooth finish.

The frame C contains three other flyers, X Y Z, similar to U V W. Each flier of frame B has its twisting axis in line with one of the flyers of frame C. Motion is communicated from flyers U V W to flyers X Y Z by means of gearing  $f^1 g^1 g^1 g^1$ ; each of the flyers X Y Z being provided with a connecting clutch  $h^1$ , so as to enable a person to throw the wheel  $g^1$  in or out of gear with wheel  $f^1$ , on the axis  $b^1$  of flyers U V W, so as to make the flyers X Y Z rotate or not.

The inventors say: We do not claim the combination of a laying frame or flier and a series of twisting flyers, each of which is made to operate one or more bobbins;

But we *claim* arranging two or more twisting flyers, or two or more series of the same, with the twisting axes of revolution of one of them in line with the others, respectively, and combining with each two flyers in line, hollow tubular necks  $a^1$ , (for the reception and support of yarn or strands from the bobbin as described,) and a contrivance or contrivances for either uniting or disconnecting such necks, so that the flyers of several series thereof may be rotated together or separately, as specified, in order that, when small sizes of rope are to be made, only one twisting flyer or series may be put in operation; and when larger sizes of rope are to be manufactured, two or more twisting flyers, or series thereof, may be combined and put in action together, and with one laying flyer, as specified.

And we claim the rope or strap R, and its weight T, or the equivalent thereof, in combination with the conical laying-tops K and the bearing plate  $y$ , the same being made to operate in manner and for the purpose of smoothing and finishing the rope, as described.

No. 13,309.—JOHN HARRIS.—*Improvement in Machinery for Making Rope*.—Patented July 24, 1855. (Plates, p. 84.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—1st. The described method of driving the flyers by means of the core pulleys  $h h$  and the band or ring F, either the said band or ring, or the bearings  $b b$  of the flyers, having springs applied to keep the pulleys and band properly in contact with each other at all times, and the band or ring being movable in the direction of the axes of the flyers, to come in contact with a larger or smaller part of the cone pulleys, and thus vary the speed of the flyers and the twist of the strands, while the machine is in operation.

2d. Making the cans H H of polygonal form, to fit snugly between

the pillars or side-pieces *e e* of the flyers, in combination with the springing collar I, applied to fit over the top of the can, whereby the cans are enabled to be quickly taken from the flyers and replaced.

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No. 12,138.—SAMUEL PEARSON, Jr., and WILLIAM H. GARDNER.—*Improvement in Regulating the Size of Roving*.—Patented January 2, 1855. (Plates, p. 84.)

Motion is transmitted from shaft *b* to shaft S by means of band and pulleys. The shaft S and the surrounding tubular shaft T carry each a bevelled gear *r* and *s*, while brake-wheel R is provided with one or two bevelled gears *t u*, arranged between and made to engage with two gears *r* and *s*. A pulley on shaft T, and a pulley on heckle-chain shaft D, and a band around them, serve to transfer motion from shaft T to the chain. The shaft K of the lower draw-roller receives also its motion from shaft *b* by proper gearing. The fibrous substance passed through E is carried forward by the endless heckle-chain B through guide F, and between the drawing rollers. The size of the roving is governed by the speed of the heckle-chain, the drawing rollers being always driven at a regular velocity. A retarding of the heckle-chain will cause the roving to become smaller, as the heckle-chain will deliver the material slower, and so *vice versa*. There being much inequality in the thickness of the sliver, in order to produce an even thread there is to be in every change of the thickness of the sliver a corresponding movement of the heckle-chain. The sliver becoming too large, forces upward the upper draw-roller, and thereby elevates the brake-lever Q that bears upon the brake-wheel R, thereby causing said wheel to slip. Now, just in proportion as the wheel is allowed to so slip, the motion of the heckle-chain will be retarded; and should the sliver become so thick as to elevate the brake entirely clear from the wheel, the chain will remain stationary till the sliver allows the brake to come down again upon the wheel: namely, when the brake is lifted entirely off the wheel R, such wheel is left free to rotate upon shaft T, and it will so revolve, or be made to revolve by the action of the bevelled gear *r* in its gears *t u*, such gears travelling around in the gear *s* without revolving it or producing any motion of the shaft T. The moment, however, that the brake-wheel is retarded, or has its motion arrested, the gears *t u* will be stopped from rotating around shaft S, and will put the gear *s* and shaft T in rotation.

*Claim.*—The combination of the brake Q (forced downwards by a spring or its equivalent), the brake-wheel R, the shafts S and T, and the connecting gearing of such shafts as applied to the draw-rollers and the gill or heckle-belt, and made to operate and produce effects substantially as hereinbefore stated.

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No. 12,581.—AUGUSTUS E. BIGELOW.—*Improvement in Preparing Woollen Roving*.—Patented March 27, 1855. (Plates, p. 84.)

10 are the spindles passing up through rings 35, which are provided with travellers in the usual manner of ring-groove spinners. The draw-

ing heads are mounted on standards 33, as in other throstle-spinning machines; but, instead of three sets of rollers, there are but two sets, each consisting of one driving-roller 12, the two rollers 12 being so geared together that the front roller will turn so much faster than the rear one as to give the required amount of drawing between them. Above them are arranged, in the usual manner, the cap or pressure rollers 11. The twisted roving, in passing from the back to the front set of rollers, is drawn out equally. As the front set of rollers, by their more rapid travel, draw out the fibres, whilst the back rollers simply hold back, the roving is of the required size for the thread at or near the front rollers, so that the twist is constantly running from the back towards the front rollers, and the roving being thus untwisted near the back rollers, the drawing out of the fibres to elongate the roving will take place near the back roller; each fibre, in succession, being drawn forward the moment its back end is liberated by the back rollers.

The inventor says: I do not limit myself to such special mode of construction, as the same mode of operation may be obtained by the mere substitution of equivalent means. But I *claim* the mode of operation specified, of spinning woollen yarns from previously twisted roving between two sets of draw rollers, substantially as specified, in combination with the subsequent twisting in the same direction by ring-groove travellers, flyers, or other equivalent devices, substantially as specified.

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No. 13,629.—HUMPHREY M. GLINES, assignor to JOHN M. STANTON and SIMON F. STANTON.—*Improvement in Machinery for filling Seine Needles*.—Patented October 2, 1855. (Plates, p. 84.)

The wheel J turns wheel K and shaft F and the cam disc L, which is fastened to said shaft; wheel S turns the wheel S<sup>1</sup>, which latter is fastened to a short shaft T. This shaft T has the gear U of eighteen teeth fastened to its upper end, to drive the wheel V of sixteen teeth, which turns loosely on shaft F, and is fastened to the hub of bevel gear Q, which latter turns within a recess in the disc L. The bevel wheel Q operates a bevel pinion P, the disc L having a suitable opening for the pinion P to work through. It will be seen from the above that Q will turn faster than L. The shaft O of the pinion has its bearing in the journal-box N, which projects from the outer edge of the disc. The shaft O terminates in an elastic fork *a a*, which clamps the needle R. Thus, it will be seen that the needle, while it revolves together with the disc, at the same time rotates around its own axis. The arm W, which supports and guides the twine *c* from the spool to the needle R, is pivoted in *f* to stand *x*, and rests on a support Z, which latter carries a friction-roller *k*, working in cam-groove *b*, in the face of the disc. The groove is so shaped that the support Z, and with it the front end of arm W, will be alternately elevated and depressed so as to carry the twine into the score *e* and under the tongue *d* of the needle R, as the score or the tongue arrives under the end of the arm W. The needle R, when filled, may be removed.

*Claim*.—Giving the needle a rotary motion around its own centre, both longitudinally and transversely, by means of devices substantially

as described, or their equivalents, in combination with a vibrating delivering arm, or its equivalent, so constructed, arranged, and operated as to supply and deliver the twine, or other material, to the aforesaid needle, substantially as described.

No. 12,146.—DANIEL T. WARD.—*Improvement in Sewing-Machines.*—  
Patented January 2, 1855. (Plates, p. 84.)

The needle 3 is so connected with the slide *h* that this latter comes up as the needle descends; thereby the point of the needle passes between the rows of bristles 9, which are arranged within the forked end 8 of the slide *h*. Instead of these bristles, springs might be used, as the inventor says. As the needle draws up again, the bristles hold on to the thread, and draw the same out sideways as the slide *h* retires, holding on to the same sufficiently to form a good loop for the shuttle or the looper 14 to pass through, the bristles releasing the thread when pulled on, to allow the needle to operate again.

The inventor says: I do not claim any particular method of moving the needle; neither do I limit myself to using my improvement with the arrangement of needles and levers to the same, herein shown; but what I desire to secure by letters-patent is: I *claim* the sliding fork 8, with or without the bristles 9, to detach the thread from the sides of the needle, or form a guide to the loop for the passage of the looper or shuttle, in the manner and as described and shown.

No. 12,233.—JOTHAM S. CONANT.—*Improvement in Sewing-Machines.*—  
Patented January 16, 1855. (Plates, p. 84.)

The improvement consists in the use of an endless circular feeder *D*, revolving continuously, so as to supply the cloth to the needle *a* (on vibrating arm *L*), without the necessity, at any time, of stopping the machine for the purpose of attaching the cloth to the feed-bar, as has heretofore been the case.

The pins *c* are to insure the motion of the cloth with the feeder.

*Claim.*—An endless rotary cloth-feeder, in combination with a reciprocating needle or needles, substantially as described.

No. 12,247.—HEZEKIAH B. SMITH.—*Improvement in Sewing-Machines.*—  
Patented January 16, 1855. (Plates, p. 85.)

Figure 3 represents the needle *W*. The finger *Y* is so constructed as to turn on a screw as seen at figure 2, which is screwed into a part of stand *S*; and under this finger there is arranged a spiral spring *V*, which is coiled around the outside of the portion of the stand to which the finger *Y* is screwed, the upper end of this spring passing through the hole drilled through the inner end of the finger *Y*, and the lower end of it made fast to the ring *u*, this ring being adjustable by having a set-screw in it to set it in the required position to give the proper pressure on the finger *Y*. *T* is a stop, the lower end of which is

screwed to the arm S, and the upper end of it answers for stopping finger Y, as it is pressed forward by spring V. The finger Y, revolving on arm S, will draw in the thread so as to form the back stitch. As soon as the needle and thread pass up through hole *a*, in table A, the finger Y, being revolved with and by arm S, brings the outer and curved part of this finger in contact with the thread, carrying it around far enough to draw up the stitch sufficiently tight, and then releasing the thread by turning back far enough to allow the thread to slip off from the end of the curved part of the finger, which is accomplished by the thread requiring an increased power to draw in the thread, and this power acting on the finger overcomes the resistance of spring V, turns it sufficiently to allow the thread to be released from the finger, and then the finger instantly regains its former position by the action of the spring, pressing it back towards stop T, the feed at the same time carrying forward and back the cloth to give the required length of stitch.

The inventor says: I do not claim a two-pointed needle having an eye in its centre, as this has been patented to J. J. Greenough; neither do I claim any other part, device, or thing claimed or patented in said Greenough's patent;

But I *claim*, 1st. A slit or fissure formed in a needle, so as to be opened by any proper pointed instrument, and the thread inserted in this fissure, and then moved near to one end of it; then by removing the pointed instrument the two elastic or spring sides of this fissure close together and pinch and hold the thread so that the needle can be operated to sew a straight or curved seam, and a through or back stitch, essentially in the manner and for the purpose set forth.

2d. I *claim* the finger Y, so arranged and operated (on the arm *s* by means of the spiral spring, the ring to adjust this spring, and the stop T, or otherwise) as to draw the thread through the cloth so as to draw up the stitch and then let go of the thread, by the revolving or moving of this finger and the arm *s*, or equivalent, essentially in the manner and for the purpose set forth.

No. 12,322.—JOHN B. NICHOLS.—*Improvement in Sewing-Machines*.—Patented January 30, 1855. (Plates, p. 85.)

The material C is placed between the guide-bars A and B, by which the binding D is applied equally upon each side of the same; the blade of the upper guide-bar A is elastic, so that it accommodates itself to any variation in the thickness of the material, and holds it and the binding firmly in position while they are sewed together. E is a movable slide, against which the edge of the material rests, and this slide is made adjustable to accommodate bindings of different widths. It is attached to the shank *d*, which is held by the clamping-screw *e*. F is the feeding-wheel, G the sewing-needle.

*Claim*.—The combination of a binding guide with a sewing-machine, meaning to claim the combination of mechanism whereby the operations of directing or applying the binding to the edge of any material and sewing it thereon, are conducted by automatic process.

No. 12,336.—SALEM WILDER.—*Improvement in Waxing Thread for Sewing-Machines*.—Patented January 30, 1855. (Plates, p. 85.)

C is the needle-carrier, J the eye on the needle-carrier through which the thread K passes from the bobbins L to the needle H; M the wax reservoir, attached to the needle-carrier, and provided with an India-rubber bottom *a*, which is so arranged between plates *b b* as to be capable of being compressed by means of screws *c c*. The thread is carried through proper holes in the plates and India-rubber bottom.

*Claim*.—So applying the wax-holder to the frame or arm of the machine, and between the needle and the eye of the needle-carrier, that the vertical movements of the carrier shall cause the thread to be moved or drawn up and down through the wax-holder and its elastic bottom, whereby the saturating of the thread becomes improved, as specified.

Also, the combination of an elastic bottom, or partition, and its compressor, with the wax-holder, the same being to regulate the application of the wax to the thread, and to prevent its escape from the wax-holder, essentially as described.

No. 12,364.—ISAAC M. SINGER.—*Improvement in Sewing-Machines*.—Patented February 6, 1855. (Plates, p. 85.)

The top of the needle-bar *b* is hinged to the carrier *c*, to which a vertical vibrating motion is imparted. The spring *h* forces the bar and carrier slightly apart when the needle is out of the cloth, the set-screw *k* regulating the extent of this motion. Lever *l* has its fulcrum in *m*; its upper end is constantly pressed inward by means of a spring *p*, so as to impart to the feed-hand *n*, at its lower end, a tendency to withdraw from the needle *a*. The lever is acted upon at the required time by one arm of lever *q*, which has its fulcrum in *r*, the other arm being operated by the cam projection *s* on the cam *e*, which works the needle-carrier. As the needle descends, so soon as its eye has passed through the cloth, the cam projection acts upon *q* and moves the lever *l*, the feed-hand *n*, and the needle, and with it the cloth, to the required distance to space a stitch. The hold-pad then comes down on the cloth to hold it during the forming of the stitch, and the feed-hand is permitted to be forced back by the tension of spring *p*, the screw *u* regulating the extent of this back-motion. Thus the motion is imparted to the needle to give the feed-motion at its junction with the cloth, avoiding all tendency to bend it or loosen it in its socket.

*Claim*.—Imparting the feed-motion to the needle to move the cloth or other substance, to determine the space of the stitches to be made therein, by a feed-hand, or its equivalent, receiving the required motion from the mechanism and acting against the needle, in close proximity to or in contact with the cloth, substantially as and for the purpose specified.

No. 12,389.—GEO. H. HORN and BENJ. H. HORN.—*Improvement in Sewing-Machines*.—Patented February 13, 1855.—(Plates, p. 85.)

The needle (fig. 1) is hollow, and the thread passes out through the hole *z* in the side of the needle; thus the thread is protected from the usual wear in the eye, and is less liable to be tangled in use. The shuttle 22, which is formed in any usual manner to slide against the side of the shuttle-box, is prevented from moving, except when operated on by the forceps, by causing the same to pass under and against a clamp 23, which is kept against the shuttle by spring 24. A slide 29, to which is imparted the proper reciprocating motion, carries the fixed jaw 30 of the forceps and movable jaw 32, set on a fulcrum 31, and with a spring 33 to keep the jaws closed; the moving jaw 32 has a point which enters the eye *O* on the end of the shuttle to move the same. For each vibration of the needle the forceps make two strokes, first passing through the loop of the thread, seizing the shuttle, pulling it through, and then returning the same beneath the clamp, leaving it, and returning ready to pass through another loop; hence it is necessary at the first stroke to open the forceps and allow them to close on the eye of the shuttle, and at the next vibration to open the forceps and keep them open until they retire clear of the eye of the shuttle. This is effected by means of an arm 34 from the moving jaw 32, which is operated on by a pin 35, which is on the end of a lever which receives the proper motion to produce the above result.

The inventors say: We are aware that sewing has been effected by two threads—the one being carried by a shuttle, the other by the needle, therefore we do not claim the same; and we are aware that the stitch has been pulled tight by the motion of the needle and needle-carrier. And we do not claim the shuttle. But we are not aware that forceps have ever been used to pass through the loop of thread and open the same, thereby insuring the opening of the loop and preventing tangling; nor do we know that the shuttle has been drawn through a loop by means of an eye on the end, thereby avoiding all liability of the shuttle not passing into the loop; and where the shuttle is forced through the loop as the needle draws up, its thread has to pass between the rear end of the shuttle, and the part has forced the shuttle forward, which is liable to break the thread.

We claim, 1st. A hollow needle with an eye in the side to pass the thread, as specified.

2d. We claim opening the loop by means of forceps, thereby insuring that the loop is properly opened, and avoiding tangling of the thread, as specified.

3d. We claim drawing the shuttle through the loop by means of the eye *O*, or its equivalent, on the end of said shuttle, as specified, thereby avoiding the risk of breaking the loop when the shuttle is forced through the same, as specified.

No. 12,402.—EDWIN A. FORBUSH.—*Improvement in Sewing-Machines.*—  
Patented February 20, 1855. (Plates, p. 86.)

The article to be sewed is clamped between jaws M M, which are supported by a carriage N, which travels on rails B. Two carriages L have awls P attached to them to form the stitch-holes. (The engravings exhibit only one of the carriages L.) The two needles Q have the point at one end and the eye at the other end, like the common sewing-needle. Each of the carriages L supports a needle-carriage T, which moves horizontally between ways U U, elevated upon said carriage L. On the inner end of each carriage T is a horizontally rotating bearer V, which is to support the bearer which lies upon the top of it, and is held down upon it by means of one of two vertical sliding clamps *a b*. Each of these two clamps is placed within one of two vertical shafts *c*, which are supported by and made to rotate freely within a horizontal arm *d* that projects from carriage T. A slide *f* slides horizontally through frame *e*; and while moving in either direction, one of its inclined planes *g h* forces downwards one of the clamps, while the other inclined plane is so moved as to allow the other clamp to rise upwards. When the carriage L is moved towards the work (by means of vibrating lever K) the shaft *c* is turned 180° of a circle so as to turn the needle around and present its point towards the work, and the needle passes through the awl-hole previously made. This done, the carriage T is stopped; but the carriage L moves still on, until the awl passes through the work. During this motion of L, the cam *e*<sup>1</sup> acts against the slide *f* so as to cause the needle to be relieved from the pressure of the clamp *a b*, which previously held it, and to be grasped at the point by the other clamp *a b*, so that, during the next retreating movement of T, the needles will be drawn in opposite directions through the work. After they have each been drawn a short distance through the work, the jaws of each set of thread-nippers S S are made to grasp the thread R and hold upon it firmly so as to draw it into the work during the further back movement of T. The needles, before they are grasped, are propelled forward by propellers *a*<sup>5</sup> *a*<sup>5</sup>, one of which is fixed to each carriage L. The upper end of arm K, when acting against carriage L, extends into notch S<sup>2</sup> in the carriage. Just previous to the end of forward motion of the carriage, a locking spring-bolt *t*<sup>2</sup> applied to carriage L is met by cam *w*<sup>1</sup>, and drives forward over notch S<sup>2</sup>, and in rear of K. This takes place just before a pin *v*<sup>1</sup> (projecting upwards from the bolt) meets and passes by the end of a longitudinal ledge *w*<sup>1</sup> on the under-side of T. When T stops, L continues its forward motion; the pin in the meantime being slid along the side of the ledge. During the next back motion of K, it bears against the bolt and forces L and T backwards on rails C; during this, the nippers draw the thread through the work, the friction of carriage T offering sufficient resistance. As soon as the thread is drawn tightly into the work, the back motion of T will be arrested by the thread; L, however, continues until pin *v*<sup>1</sup> passes beyond the rear end of ledge *w*<sup>1</sup>. Now the spring-bolt will be released and thrown back by its spring *a*<sup>2</sup> and away from K and notch S<sup>2</sup>. Now L stops; K, however, continues its back motion to its whole extent, and is then again brought forward to move



forward carriage L, as above described. Thus the machine operates under the constantly decreasing length of the thread; for, as soon as the thread is drawn into the work, whatever may be its length between the nippers and the work, the back motion of T will be stopped as soon as such length is drawn tight by the nippers.

One end of cord  $k^2$  is fastened to the frame of the machine, and, after passing around pulley  $m^2$  on slide  $d^2$ , (to which slide the nippers  $c^2$  are attached,) its other end is attached to the upper end of vibrating arm K. As K moves back, it draws on the cord so as to elevate the nippers, so that they receive the thread in the space  $r^2$  between them, when said thread is drawn out to its extreme tension. At the next advance of K or T and L, the nippers and slides  $d^2$  will fall by their gravity and carry the thread with them so as to prevent it from being entangled. When the thread is drawn through the work, it will be pulled out of the nippers by the power which draws it through the work. In order to prevent the weight of the nippers, slides, &c., from being thrown upon the thread so as to break or displace the needle, while the latter is being turned  $180^\circ$ , the following contrivance is applied:  $s^2$ , with pulley  $i^2$ , slides freely on inclined way  $e^2$ . A cord  $w^2$  passes around said pulley, one end of which is fixed to the frame of the machine, and the other end to a carriage  $x^2$  sliding upon rod  $o^2$ . A spring  $y^2$  causes  $x^2$  to slide on  $o^2$  with the proper amount of friction. On the top of  $x^2$  there is a projection  $z^2$  and a spring-catch  $a^3$ . While K retreats, it strikes and moves catch  $a^3$  so as to let K slip by. When K next advances towards the work, it strikes shoulder  $b^2$  of catch  $a^3$  and moves  $x^2$  forward until  $z^2$  strikes carriage L, whatever may be its distance from the work. The further advance of K causes  $a^3$  to be disengaged from K. By the movement of  $x^2$ , the slide  $s^2$  will be elevated to a suitable position for the upper slide to rest upon it, so as to relieve the thread from any downward pressure of the upper slide.

The inventor says: I would remark that I do not lay claim to any method of drawing the thread through the work by seizing the needle by a pair of pincers, and performing the whole operation of drawing the thread close into the work by draught on the said needle; nor do I claim a mode of drawing the thread into the work by means of a tripping roller moved by an endless chain;

But I claim combining with the carriage T the clamps  $a b$  and bearer V, or mechanism which draws the needle through the work—a set of pincers S S made to firmly grasp the thread between the needle and the work, and to be so moved away from the work as to draw the thread firmly into it, as specified.

And in combination with the said machinery for holding the needle and drawing it through the cloth or work, I claim machinery or mechanism, viz: the rotary shaft  $c$ , the clamps  $a b$ , and the bearer V, operated as described, or their equivalents, for rotating the needle, or turning or rotating it around  $180$  degrees, or end for end, as above specified, such mechanism allowing me to make use of a common or ordinary needle made with one eye and but one point, as described.

I also claim the combining with the nippers S S, and the vibrating arm K, the carriages L and T, the spring-bolt, and contrivances for operating it, as set forth; the same being not only to draw the thread

into the work with sufficient tension, but to do so under any change in the length of it, essentially as specified.

I also claim the combination of the rotating-bearer V, the two needle-clamps *a b*, and the vertical rotary-shaft *c*, as operating together, or operated substantially as described, and for the purpose of holding, releasing, and reversing the needle or turning it around, substantially as above set forth.

I also claim to combine with the rotary-bearer V, and its clamps and shaft *c*, or machinery for holding, releasing, and directing a needle into the work, a propeller *a*<sup>5</sup>, operated or made to operate substantially in the manner, and so as to force the needle into the work, as specified.

I also claim to combine with the spring-nippers *b*<sup>2</sup> *c*<sup>2</sup>, or machinery for taking up the slack of the thread, and preventing entanglement of the thread, while the carriages are being moved towards the work, the sliding carriage S<sup>3</sup>, or mechanism operating as described, for preventing the weight of the said spring-nippers *b*<sup>2</sup> *c*<sup>2</sup> and their slide *d*<sup>2</sup> from being thrown upon the thread so as to break the needle or displace it while it is being turned round, as set forth.

No. 12,577.—THOMAS J. W. ROBERTSON, assignor to T. J. W. ROBERTSON and ALFRED E. BEACH.—*Improvement in Sewing-Machines*.—Patented March 20, 1855. (Plates, p. 87.)

The inventor says in his specification: I describe the feeding operation first, supposing the dog to be raised from the surface of the cloth, and hanging against the screw *g*, as indicated in dotted lines in figure 1. I will now suppose the needle-slider and the wiper to be rising from the cloth, by which action the wiper *j* will push aside the arm *h* of the three-armed lever to the position in which it is shown in full lines, and in so doing will depress the arm *c*. The feed-bar F during the above operation will slide along the point of the screw *g* until the dog *f* bears upon the cloth, after which the dog will be caused to slide the cloth along the table in the direction of the arrow. When the needle-slider and wiper *j* descend, the wiper in pushing aside the arm *i* will raise the arm *c*; and as the dog is by that means withdrawn from contact with the cloth, the feed-bar will fall back to the screw *g*.

I do not claim in itself as new the arrangement of the feeding-dog and spring-clamp, separately operating upon the cloth on its one or outside surface, as such has before been done by the alternate action of these devices.

Neither do I claim of itself a separate and constant spring pressure applied to the outside surface of the cloth when the feeding-bar or dog is otherwise arranged to operate in connexion with the spring-clamp or hold, as specified.

But I *claim* the combination of the spring-clamp D with the feeding-bar or dog *f*, constructed, arranged, and operating together against the cloth on its one side or surface, substantially as set forth.

No. 12,754.—E. HARRY SMITH, assignor to WHEELER & WILSON MANUFACTURING COMPANY.—*Improvement in Sewing-Machines*.—Patented April 17, 1855. (Plates, p. 87.)

The needle, being passed through the cloth, in its withdrawal throws out a small bow or loop O, figure 5. The shuttle, owing to its adjustment in relation to the movements of the needle, is made to catch this loop, open it, and pass a bobbin through it, as in figure 4. The needle now begins to descend, and, passing through the cloth, takes up a part of the loop which is around the shuttle, and draws it in between the shuttle and the button J, by which it is propelled. As the shuttle continues its revolution, and the needle its descent, the button J is turned on its axis or made in any way to assume the position shown in figure 6, when the loop is entirely released from the button J, and allowed to be drawn off the shuttle, and remains around the heel (figure 6) until the needle again ascends, when the point of the shuttle enters a second loop, as in figure 3. As the shuttle continues its revolution, the first loop is slipped off the heel and drawn up by the enlargement of the second. Thus every stitch is tightened by the passage of the shuttle through the loop, which is to form a part of the next stitch.

The inventor says: I am aware that machines have been before constructed in which a rotary shuttle has been used, and also that a machine has been made which is the subject of a patent granted to Allen B. Wilson, and dated June 15, 1852, in which a combination is used of a bobbin with a rotating hook, which operates upon the loop in such a manner as to throw it over the bobbin. But I would have it understood that I make no claim to any such rotating hook, or any rotary shuttle, except that represented and described in the accompanying drawing and specification.

I therefore *claim* a discoidal shuttle, having its bearings in its periphery and revolving around its own axis, when constructed substantially in the manner and of the form described.

And as a means of propelling the shuttle, I claim the employment of the lune-form button, constructed as described, which has a movement on its axis in the manner set forth, for the purpose of allowing the thread to slip alternately into and out of the concave in its periphery, and thus pass off the shuttle.

No. 12,573.—GEORGE W. STEDMAN.—*Improvement in Sewing-Machines*.—Patented March 21, 1855. (Plates, p. 87.)

By turning eccentric *k*, the slot *i* can be made shorter or longer; thus causing the needle, sooner or later, to be thrown back, thereby effecting a longer or a shorter stitch.

The finger *M* is attached to the rocking-shaft *C*. The finger recedes when the needle descends, and advances when the needle rises. As the finger recedes the loop is retained by spring *p*, till the needle descends between it and the beak *m*, just in front of shoulder *n*, which spreads the loop for that purpose. As the finger recedes further the loop is pulled away from spring *p*, and is drawn up to the cloth.

The inventor says :

I *claim* feeding the cloth along by means of the needle acting as a lever against it over a fulcrum *t*, the needle-carrier being driven for the purpose with a crank motion or its equivalent, substantially as set forth.

In connection with the above motion of the needle, I also claim regulating the length of stitch by the combined action of the slot *i*, of adjustable length, and the slight spring *j* or its equivalent, for throwing the needle away from the fulcrum when disengaged from the cloth, substantially as described.

I also claim the construction of the finger *M*, with a thin-pointed beak *m* for entering the loop, with a wedge-shaped shoulder *n* for spreading the loop open to receive the needle in turn, and with a spring *p* for retarding the motion of the loop, arranged and operating in combination with the needle, substantially in the manner and for the purposes set forth.

No. 12,798.—GEORGE W. STEDMAN.—*Improvement in Sewing-Machines*.—Patented May 1, 1855. (Plates, p. 87.)

*Claim*.—Feeding the cloth or other material along by means of a pin *a*, or its equivalent, playing in a revolving shaft *B*, which, at the proper moment in each revolution, brings it in contact with a stationary cam *M* or its equivalent, whereby the pin is pressed into the cloth, but again recedes therefrom as soon as freed from the cam, substantially as herein set forth.

Also the cam *M*, constructed substantially as described, when arranged upon a movable arm or its equivalent; so that, by simply adjusting its position, the length of stitch can be varied at the will of the operator.

No. 12,826.—HENRY B. ODIORNE.—*Improvement in Guides for Hemming and Cording*.—Patented May 8, 1855. (Plates, p. 87.)

The retainer *G* is intended to keep the cord *H* securely in its place within the hem before it is stitched, and to keep the said hem down afterwards. The spring-guide *F* acts as a gauge for the width of the hem, while its elasticity allows inequalities in the fabric to pass.

The inventor says : I do not claim an adjustable spring-guide for a sewing-machine, nor do I claim the combination of a guide for the cord with a hemming-guide, as in the patent of S. C. Blodget, upon which invention I conceive I have made a marked improvement.

But I do *claim* the curved retainer *G*, with its notched end *h*, in combination with the shoe *d*, for effectually keeping the cord in contact with the inside of the hem of the fabric, while the said hem is being operated upon by the needle and thread of a sewing-machine.

No. 12,856.—JOHN CHILCOTT and JAMES SCRIMGEOUR.—*Improvement in Sewing-Machines*.—Patented May 15, 1855. (Plates, p. 87.)

The material is placed between disk D and roller E. As the roller revolves it will move the material, and (by friction) also the disk, which turns freely in the bed-plate F, and through the centre of which the needle works. The axle *d* of the roller is attached to a sleeve *e*, which is capable of being turned freely around head C by forcing it (the sleeve) up against spring *i*, and raising it, so that the teeth at its lower edge *g* will be above the clutch *f*, which is fast to the head C. When moved round into the required position, the sleeve is again dropped into the clutch, which keeps it stationary.

Although the surface of the disk moves in circles, the distance it moves during every movement of the material is so short, that it comes sufficiently near a straight feed-motion, which, moreover, will be insured by applying a slight drag to the material in the desired line of feed. As the roller is capable of moving right round the needle, it is plain that the feed can be given in any line. The direction of the feed may be changed at any point by stopping the machine, with the needle in the work, to confine it in its place, before changing the position of the roller, and the work will proceed in a new direction.

The inventors say : We are aware that sewing-machines have been constructed so that their feed-mechanism might be varied to run the seam either longitudinally with or circularly round a cylindrical mandrel by substituting one set of feeding-rollers for another, and that these rollers have been arranged on one side of the material being sewn, to operate in connection with bearing-rollers on the other side, to prevent drag, and that such bearing-rollers have been made adjustable round the needle, to run in either one of the two directions of seam specified ; such, therefore, we do not claim, neither do we use or claim a rotating table, with guide, on its face, to adjust the direction of the seam, as known to be old.

But we do *claim* the arrangement herein shown and described of the revolving disk D, within or on the fixed table, and having its axis in line with the needle, as specified, when combined to operate together with a roller E, bearing on the opposite side of the cloth, and made adjustable to any position in a circle round the centre of the said disk, to vary with facility and despatch the run of the seam in lines, on any side of the needle, without the aid of guides on the face of the table, and whether the revolving disk or bearing-roller be caused to move the cloth, as herein set forth.

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No. 12,858.—HENRY W. DICKINSON.—*Improvement in Cording-Guide for Sewing-Machines*.—Patented May 15, 1855. (Plates, p. 88.)

The operation of this improvement is apparent from the figure.

*Claim*.—1st. A holder or presser A to a sewing-machine, formed with a groove *b*, to hold a cord in its place while being stitched into cloth or other material, for the purpose of forming a corded seam, in the manner described.

f 2d. Forming the face or bearing side of an adjustable guide B with grooves *g* so arranged as to receive and act upon a finished corded seam, and guide the cloth parallel while stitching another seam or sewing in another cord, as described.

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No. 12,902.—CHARLES A. DURGIN.—*Improvement in Sewing-Machines*.—  
Patented May 22, 1855. (Plates, p. 98.)

When the needle has passed down through the cloth and has been drawn back far enough to form a bow of thread, the vibrating-hook T (which is pivoted to the plate N, against which the shuttle D works) is acted upon by a cam-pin on collar S of driving-shaft H, and shuts in between the thread and needle against the small yielding spring *d'*, and holds the thread down until the shuttle has passed nearly through the loop, when the cam-pin releases the hook, which is forced back by spring *e'*, while the forward motion of the shuttle in connection with the final upward motion of the needle causes the two threads to be drawn tight to form the stitch.

Figure 4 is an end view, and figure 3 a bottom view of the parts above referred to; figure 5 a detached side view of the hook.

*Claim*.—The vibrating-hook for holding down the thread during the partial passage of the shuttle through the loop, when arranged and operating substantially in the manner described.

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No. 12,923.—T. J. W. ROBERTSON.—*Improvement in Sewing-Machines*.—  
Patented May 22, 1855. (Plates, p. 88.)

The needle *a* is worked in the usual way. The looper *b* is attached to lever *c*, which works on pivot *d*, which is secured in the frame of the machine a short distance below table A. Lever *c* has a spring *h*, applied to it in such a way as to throw up the looper as high as the under side of table A. (See figure 3.) It is provided with a slot *i*, to receive a pin *e*, which is secured to slider *f*, which works in fixed slide *g* parallel with the needle *a*. Slider *f* has a small eye or ring *j*, in line with the needle and large enough for the point of the needle to pass through, but not large enough for the needle to pass entirely through. During the greater part of the descent of the needle the looper is held up by spring *h*; but shortly before the descent terminates the needle enters as far as it can through *j*, and drives down the slider, whose pin *e* carries down lever *c* far enough to throw the point of the looper to the opposite side of the needle to that on which it stands when it is raised up to the table. The point of the looper works close to the needle as it passes it; and when the lever is allowed by the ascent of the needle to be raised by the spring, the looper passes into and extends the loop and retains it (see figure 3), until the needle passes and carries the thread through it to form the next loop. The fixed rounded piece *l* prevents the closing of the loop under the sharp edge of the hole in the table, and also prevents the loop from slipping over the point of the looper.

The strong black line represents the thread.

*Claim.*—So arranging and applying the looper *b*, or its equivalent, by which the loop in the needle-thread is extended or directed for the purpose of completing the stitch, that it shall derive its movement from the needle substantially as herein described.

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No. 12,939.—JOSEPH BOND, jr.—*Improvement in Sewing-Machines.*—  
Patented May 22, 1855. (Plates, p. 88.)

This invention consists in producing the so-called "Howe's lock-stitch," by means of a spool-case caused to revolve horizontally, while the needle has a vertical movement. The spool-case rests and revolves on a ledge in a spool-case holder, the ledge as well as spool-case being so constructed as not to interfere with the needle-thread. The spool-case is a circular hollow box, with teeth on its outer edge; it has also on its edge a nose for catching the needle-thread, in place of a shuttle; the nose being arranged in regard to the above-mentioned ledge in such manner that, as the case revolves, the needle-thread passes perfectly free; within the case is placed the spool in such manner that both may revolve together, and radiating from the centre of the spool is an arm whose movement is entirely independent of the spool or case; this movement being given by the spool-thread, which passes from the said spool through a small hole at the end of the arm, and thence through another hole in the centre of the spool-cap towards the material to be operated upon. The spool-case is, with its spool, caused to revolve on the ledge within the holder by means of the teeth on the periphery of the case gearing into the teeth of a wheel on a vertical shaft, which has an irregular or differential revolving motion given to it by means of an elliptical toothed-wheel *F*, which gears into a similar wheel *E* on the driving-shaft *B*; thus causing the spool-case and spool to turn in such a manner that in some portions of a complete revolution, it turns faster than at others, causing a dwell or hesitation, which, in conjunction with the movement of the needle, effects the stitch. The spool-case has a nose *L* on its outside edge interrupting the teeth on the same. This interruption corresponds with the portions of the wheel *H* where the teeth are cut away, so that no impediment may be offered to the free movement of both wheels, the lengthened tooth *i* meeting a corresponding recess in the outside edge of the spool-case, giving further security to the due performance of the said movement.

The auxiliary lever *X* is operated by a peculiar-shaped cam *W* on the driving-shaft, for the purpose of taking up the excess of slack in the needle-thread independent of the motion of the needle, thereby requiring the vertical movement of the needle to be less than in other machines, and consequently allowing a greater amount of speed.

In the engravings the waved line represents the needle-thread, and the broken line the spool-thread.

The inventor says: I do not lay any claim to the feeding-apparatus, or to the method of actuating the needles;

But I do *claim*, 1st, the spool-case *I*, with teeth or their equivalents on its outer edge, and the nose *L*, for catching the needle-thread,

in combination with the wheel H, having teeth cut away at *p*, substantially in the manner and for the purpose specified.

2d. The hollow spool-case I, with its spool M, in combination with the radiating arm N, or its equivalent, as shown and described.

3d. The auxiliary lever X, as operated by cams on the driving-shaft C, not for the purpose of controlling the needle-thread between the eye of the needle and the goods, as in Harris's and Howe's machine, nor for the purpose of tightening the stitch, as this is done by the needle-bar, but in conjunction with the spool-case I, so as to accommodate the needle-thread as it passes over the spool-case, thereby diminishing the extent of movement required in the needles of other machines.

No. 12,969.—ISAAC M. SINGER.—*Improvement in Sewing-Machines*.—Patented May 29, 1855. (Plates, p. 88.)

The cloth is pressed on to the roughened surface of the feed-wheel *d* by means of the pressure-pad *e*, (the needle working through a slot in the pad,) on the end of arm *f*, which turns on fulcrum pin *g*, secured to slide *h*, which is adapted to slide on the standard *i* of the needle slide. Spring *j* causes the pad to press on the cloth. The pad thus arranged moves with the cloth when advanced by the feed-motion of wheel *d*, and thus avoids the tendency to produce a wrinkle. So soon as the feed-motion has taken place, and the needle begins to enter the cloth, the pad is lifted up (by means of a cam on the needle cam shaft) that it may be forced back to its original position by the tension of the delicate spring *l*, which acts on the pad arm.

*Claim*.—In sewing seams in cloth and other substances by machinery, suspending the feed-motion for the purpose of causing the needle to perform two successive operations in one and the same puncture, to tie the seam, substantially as specified.

Also, connecting the pressure-pad with its slide, or the equivalent thereof, by means of a long jointed arm, substantially as described, in combination with the feed-wheel, or its equivalent, as described, so that the said pressure-pad shall move with the cloth or other substance, when fed forward for spacing the stitches, instead of making friction, which would tend to pucker or wrinkle such cloth, or other substance, as described; and by which, also, the cloth is relieved from pressure after the needle has entered, so that it can be turned freely on the needle as an axis, as set forth.

No. 12,984.—ADDISON CAPRON, assignor to HIMSELF, JAMES S. DENNIS and HERVEY M. RICHARDS.—*Improvement in Sewing-Machines*.—Patented May 29, 1855. (Plates, p. 89.)

This machine serves for sewing hooks and eyes, or various articles, to a sheet of paper or other material. The secondary carrier D is provided with teeth, engaging with the gear E, supported on a stationary shaft G, which is upheld by arm F, extended from the main frame. H is a



coiled spring within the gear-wheel, with one end fastened to the wheel and the other to the shaft G. The object of so applying the needle to the main carrier is to prevent breakage of the former, should its point by accident be carried into the upper surface of the article to be sewed to the paper. When this happens, the coiled spring, although operating to press the secondary carrier downward against shoulder *a* of the main carrier, will yield sufficiently to let the secondary carrier remain stationary while the main carrier continues to descend.

*Claim.*—Combining the needle with the main carrier by means of a secondary carrier and a spring, or the equivalent thereof, applied to the main carrier, so as to operate substantially in the manner and for the purpose before specified.

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No. 13,064.—T. J. W. ROBERTSON.—*Improvement in Sewing-Machines.*  
—Patented June 12, 1855. (Plates, p. 89.)

The needle *a* passes through the cloth far enough to bring its eye below the point of the looper. When the needle begins to rise and leave the thread slack, it also begins to turn on its centre towards the point of the looper, and by that means throws the slack of the thread over the said point; and as it continues to rise, it draws the thread in the form of a loop over the looper, which, without detaining the loop, merely keeps it open and in a proper position for the needle to pass through it in its next descent; as tension is produced on the thread by the descent of the needle, the loop is drawn entirely over and off the looper, (the looper passing entirely through the loop.) The turning of the needle and needle-carrier *d* is effected by means of the pin *f* projecting from *d*, which pin, during the ascent of the needle, follows the curved surface of spring *g*, thereby effecting the turn of the needle. When arrived near the end of the ascent, the pin, catching under and sliding along the inclined under-surface of *i*, is turned back, and during the descent of the needle slides behind the spring *g* without being turned.

*Claim.*—Making a needle-thread single or chain-stitch, by means of a detached and loosely held looper *b* and reciprocating needle, arranged and operating together in such a manner that while the needle in its back-stroke draws the slack of its thread on to or along and around the looper, the looper, without detaining the loop formed by the drawing of the slack of the needle thread on and along it, guides and keeps the loop open, and the needle and its thread, in their next advance stroke, pass through the open loop, which, kept moving, and having the further feed of its own or needle-thread passed through it, as specified, is drawn entirely over and off the looper *b* to complete the stitch, substantially as described.

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No. 13,065.—ISAAC M. SINGER.—*Improvement in Sewing-Machines.*  
—Patented June 12, 1855. (Plates, p. 89.)

The cloth is held between the pad *j* (on rod *k*, secured to the frame which carries the needle-carrier) and the periphery of the feed-wheel

*c*, by the tension of the spring *h* acting on the lever *f* (the wheel *c* being pivoted to the extended part *e* of lever *f*), and the lever and wheel will move towards and from the pad to follow the varying thickness of the cloth. The feed-wheel *c* is turned by a ratchet pawl (not shown in the engravings).

The inventor says : I am aware that the cloth in sewing-machines has been held to the periphery of the feed-wheel by yielding pressure, and therefore I wish it to be understood that I make no claim to this mode of operation.

I *claim*, feeding the cloth or other substance in sewing-machines by means of a wheel hung on a vibrating lever, or equivalent therefor, and borne upward by a spring or its equivalent, against the under surface of and in combination with a fixed pad, substantially as described.

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No. 13,178.—JEAN PIERRE MOLLIERE.—*Improvement in Sewing-Machines*.—Patented July 3, 1855. Patented in France, May 30, 1855.

A description and drawings, illustrating the various features of this improvement, would necessarily be too extensive to be given in this report.

I *claim*—of even date with the French patent for the same invention—

1st. The movable fulcrum *b*, of the graduated sliding-piece *d*, for lengthening or shortening the arm of the lever *b c*, in connection with the catches *f f*<sup>1</sup> *f*<sup>2</sup>, of different lengths, whereby the movement of the rack-shaft *O*, or of the pinion *P*, can be varied at pleasure, so as to produce any length of stitch that may be desired; the whole arranged and operated substantially in the manner described.

2d. The guides *T T*<sup>1</sup> of the tooth-rack *Q*, and the rollers *G G*<sup>1</sup> *G*<sup>2</sup> for keeping in place the adjustable piece-carriers *R R*, and the tooth-rack *Q*<sup>1</sup>, which steadily pushes forward the piece to be sewed, so as to secure a regular succession of stitches; the whole arranged and operated substantially in the manner described.

3d. The action of the hook or lever *h*, when the upper needle-carrier is ascending, upon the lever *i*, whereby the point *j*, bearing upon the rod *k*, makes it press the piece *m* against the piece *n*, so as to seize and hold fast the needles between the shoulders of the pieces *m* and *n*, at the moment when the lower needle carrier has driven them through the piece to be sewed; the whole arranged and operated substantially in the manner described.

4th. The lever *F*, and its two hooks *X X*<sup>1</sup>, for passing beyond the line of sewing, and taking hold of the thread at the moment when the needles are held above the plates *S S*, and pulling it after them, and closing up the seam, together with the apparatus fig. 5, Plate I, for overcoming the obstacle arising from short threads; the whole arranged and operated substantially in the manner described.

5th. The stopping levers 4 and 4<sup>1</sup>, fig. 7, Plate I, for arresting the two needle-carriers in their course when the thread breaks, which, by

throwing the ball 10 out of perpendicular, ungear the catches  $f f^1 f$  by the piece K H, and so bring the machine to a stop; the whole arranged and operated substantially in the manner herein described.

6th. The sewing of every kind of seam, whether straight or crooked, by what is known as the shoemaker's stitch, in the manner substantially described.

No. 13,195.—JEROME B. WOODRUFF.—*Improvement in Sewing-Machines.*  
—Patented July 3, 1855. (Plates, p. 89.)

The needle-arm (made in imitation of a bird) is hollow. P is the shuttle carrier.

The inventor says: I *claim*, 1st. The making of the needle-bar hollow, and providing it with a door or slide, for the purpose of holding incased therein such parts of the machine as may be desired; and this I claim, whether the needle-bar be ornamented as described, or otherwise.

I also claim the direct and positive connection of the needle-arm and shuttle-carrier, by which means they both move simultaneously and in perfect harmony with each other, so that whichever way the pulley is driven, the operations of the machine will be the same, substantially as described.

No. 13,201.—GEORGE W. STEDMAN.—*Improvement in Sewing-Machines.*  
—Patented July 3, 1855. (Plates, p. 89.)

The bobbin B consists of a circular case formed of a convex plate  $f$  on one side and a flat plate  $g$  on the other, the two plates being united by a rivet in the centre. The flat plate  $g$  is somewhat less in diameter than the plate  $f$ , so as to leave sufficient space inside of the edge of the latter for the thread  $s$  to be wound in or unwound; and its outer surface is sunk below or flush with the edge of plate  $f$ , which will consequently rest closely upon any flat surface, and completely hide the flat plate. Thus the loop will be allowed to pass under the bobbin without danger of its getting inside of it.

*Claim.*—Mounting a bobbin B, or its equivalent, upon and combining it with a reciprocating plate or looper A, which is provided with a pointed projection extending before said bobbin, and arranged so as to enter the loop of the needle-thread, then carry the bobbin over the outside of and finally back through said loop, substantially as described; whereby the liability to miss the stitch and break the needle, together with the noise and friction of a shuttle, is avoided, the use of oil for lubricating the shuttle-race dispensed with, and the consequent soiling of the thread prevented.

Also constructing the bobbin with one face sunk below or flush with the edge of the other face, its thread consequently unwinding from its face instead of its periphery, for the purpose of preventing the loop of the needle-thread getting inside of the bobbin, substantially as set forth.

No. 13,242.—JEROME B. WOODRUFF.—*Improvement in Sewing-Machines.*—Patented July 10, 1855. (Plates, p. 90.)

The wrist-pin *d*, on the revolving pulley I, communicates a reciprocating motion to the lower arm of the needle-carrier E, by means of a connecting-rod H, the wrist-pin *c* of which can be adjusted in the slot *b* of said arm, for the purpose of adjusting the amount of vibration of the needle D. The position of the parts referred to in the second part of the claim is represented in fig. 1; R representing the shuttle-box, and F the shuttle. The feeding-arm P is pivoted to bracket U, and is operated by the same wrist-pin *d*. The inclined plane *i*, at the upper end of the feeding-arm, in conjunction with pin *r*, on the under-side of the feeding-pawl V, serves to deflect the same a distance equal to the length of the stitch required. The upper end of the feeding-arm likewise carries the teeth *j* of the feeding-pawl alternately into, and permits it to be withdrawn from contact with, the cloth. The pawl is pivoted at its rear end. An adjustable eccentric-pin X, connected with a hand and dial, is arranged to act against the pawl, to move it laterally more or less, to set it in such position that the inclined-plane *i* will strike it, sooner or later, as it is required to feed more or less to produce a longer or shorter stitch.

*Claim.*—1st. The arrangement of the needle-shuttle and feeding-arms, the connecting-rod H and pulley I, with its wrist-pin *d*, substantially in the manner and for the purpose set forth.

2d. The giving to the needle and the shuttle such relative range of vibration, that at the time the shuttle is forward, the needle raised, and the tension upon the stitch the greatest, the distance between the eye of the needle and the eye of the shuttle, and the stitch, will be equal; thereby more effectually insuring an equal draught on both threads of the stitch, within the body of the cloth.

3d. The combination of the feeding-pawl with the feeding-lever to raise and lower the teeth of the pawl, and the inclined plane to vibrate them laterally, in the manner and for the purpose set forth.

4th. The combination with the feeding-pawl of the eccentric-pin X, a pointer Z, and an index or dial graduated and numbered, whereby the machine can be adjusted to vary the length of the stitches, at will, to any required number to the inch; and the number which the machine, as adjusted, will make, can at any time be observed without measurement or calculation, whether it be in operation or not.

No. 13,275.—FREDERICK R. ROBINSON.—*Improvement in Guides for Sewing-Machines.*—Patented July 17, 1855. (Plates, p. 90.)

Projecting downward from the under-side of a spring-presser D, (applied to press the cloth down upon the bed C,) and forward in front of the needle A, is the seam-gauge E, it being a thin metal plate, made wedge-shaped, so as to lie and fit into a seam, and rest upon the stitches by which the two pieces of cloth are united. While sewing a line of stitches, the needle operates at such a distance from the plane of the gauge as it may be desirable to have the line of stitches from the seam,

the gauge resting in the seam and serving to guide and maintain the cloth in such direction with respect to the needle, as to cause the line of sewing made by it to be parallel to the seam.

*Claim.*—The combination of the seam-gauge or guide with a sewing-machine.

No. 13,353.—JAMES HARRISON, Jr.—*Improvement in Sewing-Machines.*—Patented July 31, 1855. (Plates, p. 90.)

The nature of this improvement will be understood from the claims and engravings.

Fig. 2 represents the feed in two positions: one represented in full, the other in dotted lines.

*Claim.*—1st. Feeding the material to be sewed by means of a feed-plate B, which is guided substantially as herein described, in the direction of any curved, circuitous, or irregular line of sewing, by means of grooves  $d$   $d^1$ , or their equivalent, on its back-side, of a form corresponding to the said line, receiving or working in contact with fixed pins  $c$   $c^1$ , or their equivalent fixed guides, whereby motion is only allowed to the said feed-plate in such direction as to make the material describe, in passing the needle, the intended line, the said feed-plate receiving motion by any mechanical device suitable for the purpose.

2d. Combining the guide-pins  $c$   $c^1$ , or their equivalents, with the shoe  $c$ , which confines the feed-plate and produces the necessary pressure of the plate on the material A, substantially as specified.

No. 13,362.—ISAAC M. SINGER.—*Improvement in Sewing-Machines.*—Patented July 31, 1855. (Plates, p. 90.)

The feed-plate  $d$  (roughened at its upper surface) has a vibratory motion. During its forward motion, the cloth between it and the pressure-pad  $p$  will be carried forward; but during its backward motion the lifter  $r$  rises and holds the cloth above the upper surface of the feed-plate, so that it (the cloth) will not be carried back with the backward motion of the feed-plate.

*Claim.*—The combination of the lifter, substantially as specified, with the vibrating feed-plate and pressure-pad, substantially as and for the purpose specified.

No. 13,499.—FRANCIS A. ROSS and WM. H. MARSHALL.—*Improvement in Sewing-Machine Cases.*—Patented August 28, 1855. (Plates, p. 90.)

The nature of this invention will be understood from the claims and engravings.

We *claim* the making the case in the form of a cabinet, which when opened will afford space for operating the machine by the treadles, and will form a table for the work, by raising the leaves and support-

ing them by the doors of the cabinet when thrown open, in the manner described.

We also claim the construction of the folding top, which when open furnishes drawers and shelf for the convenience of the operator, as described.

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No. 13,616.—JAS. HARRISON, Jr.—*Improvement in Sewing-Machines*.—Patented October 2, 1855. (Plates, p. 91.)

F F<sup>1</sup> are the ends of two elbow-levers, which drive the two sliding needle-bars E E<sup>1</sup>. The cam which operates the levers is so shaped that both needles will be withdrawn from the material during part of the revolution. Before the lower needle is withdrawn, the needle *b* enters its loop, to retain it and hold it in readiness for the upper needle *a*. Needle *b* is attached to bar *b*<sup>1</sup>, which slides in a guide at the side of and nearly parallel with needle-bar E, said guides being in the same plate, G, as the guide of the said needle-bar; and needle *b* is connected by a hook at its upper end with elbow-lever *c*, which is pivoted to G. Bar *b*<sup>1</sup> is fitted to its guide in plate G, so that it can move sideways a limited distance, which, in connexion with the spiral spring around *b*<sup>1</sup>, imparts a tendency to throw the point of *b* always away from needle *a*. When needle *a* is in the cloth, *b* is kept lifted up by reason of the swelled part *f* of bar E having thrown aside the upper and raised the lower arm of lever *c*; but as *a* is withdrawn from the cloth, and the swelled part *f* leaves the lever *c*, the needle *b* is forced down by the spiral spring until it passes close behind *a*<sup>1</sup>, and between said needle *a*<sup>1</sup> and its thread, in the same manner as needle *a* would do if descending at the same time; and then it passes through the cloth and remains stationary until the lower needle has been withdrawn and left the loop around it.

The clamps I I<sup>1</sup>, between which the cloth is sewed, are jointed by knuckle-joints *p p*<sup>1</sup> to forked-rods *k k*, which are rigidly attached one to each of the guide-plates G G<sup>1</sup>.

The swinging movement of the clamps allows the material to be liberated during the feed movement. The face of the plate I<sup>1</sup>, which is the plane in which the interlacing of the loops is to be performed, so as to show only a single thread on the upper surface of the material, nearly bisects the angle formed by the lines of motion of the needles, and is kept in that position during the vibrations of the guide-plates, by connecting plate I<sup>1</sup> at one end, by rod *q*, to the fixed plate H<sup>1</sup>. The lower point of attachment of rod *q* and the centre *l* being equidistant with the upper point of attachment, and the centre *p*<sup>1</sup> and rod *q* being of the same length as from *l* to *p*<sup>1</sup>, the plate I<sup>1</sup> must have a parallel movement. The upper clamp I, being suspended in one transverse line, accommodates itself to any variation in the thickness of the cloth. Pressure is given to the clamps (in order to hold the cloth) by a spiral spring attached to arms on the rear ends of shafts N N<sup>1</sup>, which latter carry arms P P<sup>1</sup>, which are connected by links R R<sup>1</sup> to plates G G<sup>1</sup>. The opening of the clamps to release the cloth during the feed movement is produced by a stud on shaft C.

The feed mechanism is not exhibited in the engravings, as it forms no part of the invention.

*Claim.*—1st. In connexion with the giving of the two needles *a a'* such a movement as will cause both at once, during any revolution or stroke of the machine, to be withdrawn from the cloth for a sufficient time to effect the feed movement, the employment of a supplementary needle *b*, arranged and operating substantially as described, to supply the place of the needle *a*, which operates first after the feed movement, and to retain the loop in the thread which has been put through the cloth by the needle which last leaves the cloth before the feed movement, until the first-named needle operates to pass through the said loop, substantially as described.

2d. The attachment of the clamps *I I'*, which hold the material to be served to two swinging guide-plates *G G'*, or their equivalents, which serve also as guide-plates for the needle-bars, and thereby cause the needles and the clamps to swing together, substantially as described; whereby the clamps are enabled to accommodate themselves to different or varying thicknesses of material, and to be opened to slacken their hold upon the material during the feed movement, and the needles are enabled to be kept in a proper or desirable relation to the clamp.

3d. The connexion of the two swinging guide-plates *G G'*, or their equivalents, in any manner substantially as described, whereby one of them is caused to have a movement so much greater than the other, that the relative movements of the needles and clamps shall be such that the needles, in all positions of the clamps, will cross each other in the plane of, or as near as is desired to the plane of the face of one of the clamps, which is the plane of one surface of the material, as fully set forth.

No. 13,630.—C. J. COWPERTHWAIT. — *Improvement in Sewing-Machines.*  
—Patented October 9, 1855. (Plates, p. 91.)

The foot *j* of the bar *J* (which latter slides in the stand of the machine) is held down upon the cloth by means of a weighted lever *K*. When it is desired to insert a new piece of cloth, or to remedy any defect in the seam, the operator pushes the lever backwards, until the pin *m*, which projects from the stand, occupies the lower end of slot *k*, and the bottom of projection *o*, on the lever, arrives at the top of stop-piece *p*, (see dotted position in fig. 4.) by which movement the character of the lever is changed from a lever of the second to one of the first order, with *p* for a fulcrum, and instead of pressing on bar *J*, it holds it up. The pin *n*, projecting from the bar *J*, is held in the slot *l*. When lever *K* is in this position, with bar *J* raised, if the foot should be struck by the needle-bar and commence to be pushed down, the slot *k* would move down the pin *m*, and by moving a very little way, would throw the lever forward, and throw the bottom of the piece *o* off the top of *p*, allowing the inclined back of *o* to slide down, and the slot *k* to slide all the way down the pin *m*, bringing down the bar *J*.

By arranging the shuttle-race obliquely (as will be understood from fig. 3,) the dragging action of the shuttle on the outer side of the loop, or side farthest from the needle, will be counterbalanced, and the stitches on the upper side of the cloth will be in one line.

The sharper the shuttle, the less drag will it give the loop, and less obliquity of the shuttle-race will be required.

The inventor says: I do not claim the application of a weight simply to give pressure to the cloth-holder, either fixed or adjustable.

But I *claim*, 1st, the weight trip-lever K applied, substantially as described, to the bar J or its equivalent, which holds the cloth, so as to serve not only to apply pressure to the cloth, but to hold up the said bar, or equivalent, from the cloth, when desired; and also to allow the said bar or equivalent, when its foot is struck by the needle-bar, while it is held up, to descend, and to hold it down again until it is lifted by the operator, substantially as described.

2d. I claim arranging the shuttle-race obliquely to the direction in which the cloth is moved, to produce the seam or line of sewing, substantially as described, for the purpose of causing the visible parts of the stitches on the front or upper side of the cloth to be straight, or all in the same line.

No. 13,661.—ISAAC M. SINGER.—*Improvement in Sewing-Machines.*—  
Patented Oct. 9, 1855. (Plates, p. 91.)

When the shuttle-thread is loose between the cloth and the hole in the shuttle through which it passes, the thread is apt to get in the way, or sometimes on one and then on the other side of the needle, thereby producing unevenness in the stitches. To prevent this, a spring thread-guide *j* is attached to the upper surface of shuttle *d*, extending nearly the whole length thereof, and making pressure on the thread, the rear end being curved for a short distance, and then straight, so that when the shuttle advances, the thread shall be drawn back under the spring and back to the curve; and when the shuttle moves back, the thread shall be held by the curve of the said guide, by which it is held in a straight line until after the needle enters the cloth, and then it slips off from the curved part of the guide.

The needle-bar *m* is connected with the sliding-needle carrier *n* by a joint pin *o*, so that it can vibrate in the direction of the motion of the shuttle; and it is provided with a delicate spring *p*, the tension of which tends constantly to carry the needle *q* to the extent of its range of motion in the direction the reverse of the feed motion. As the feed motion is continuous, the moment the needle enters the cloth it begins to move with the feed motion, and continues to move along with it during the entire operation of forming the stitch and until it comes out again, the needle-bar admitting of this motion by reason of its connection with the carrier by the said joint pin, and the moment the needle is out of the cloth it is carried back to its original position by the spring *p*.

The object of this is to avoid the irregularity in the spacing of the



stitches, due to the necessity of overcoming friction and the inertia of all the moving parts, when operating with an intermittent feed motion.

*Claim.*—In combination with the shuttle, and attached thereto, the employment of a spring pressure guide, substantially as specified, to control the shuttle-thread as the needle enters the cloth, or other substance to be sewed, as set forth, and for the purpose specified; and the continuous feed motion for spacing the stitches, substantially as specified, in combination with the vibratory motion of the needle imparted in one direction by the feed motion, and in the opposite by a spring or any equivalent therefor, substantially as and for the purpose specified.

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No. 13,862.—ISAAC M. SINGER.—*Improvement in Sewing-Machines*.—Patented October 9, 1855. (Plates, p. 92.)

The feeding is effected by tongue *f* on the lower end of lever *g*, which turns on fulcrum-pin *h*, attached to pressure slide-bar *i*, which is forced down by spring *j*, thereby causing the tongue to make a pressure on the surface of the cloth. The lower end of lever *g* is fitted to work in a slot in the foot *k* of the pressure-bar *i* towards and from the needles *b b*. The lower end of the lever with the tongue is forced outwards from the needles to take the required position for the feed by the tension of spring *l* at the upper end; and it is moved towards the needles to give the feed by the U-formed lever *m*, one end of which acts on the lever, the other end being acted upon by cam *n* on the needle cam-shaft, so located as to give the feed-motion just before the needle enters the cloth. After the needles have entered the cloth, the pad is lifted to permit it to be drawn back by the tension of the spring *l* by a cam *o*, which acts on an arm *p* attached to the pressure sliding-bar *i* before named. There is a lever *q* which turns on a fulcrum-pin *r* attached to the standard of the frame. This lever is vibrated in one direction by a spring *s*, which keeps the rear end of the arm in contact with the surface of a cam *t* on the driving-wheel *u*, and so formed as to vibrate the said lever in one direction the moment the needles have risen, and keep it in a state of rest during the descent and rise of the needles, and then to permit it to be vibrated back in the opposite direction at the end of the up-motion of the needles, and then to hold until the needles have again risen. The lever carries a spool *v* at its rear end; the thread from which, whether single or compound, passes through a guide *w* also on the lever end, then around a tension wing *x*, to regulate the tension by the turning thereof; and from this the thread passes through an eye or guide *y* on the forward end of the lever end, thence through an eye in the extreme end of the thread-carrier *z*, attached to and projecting laterally and downward from the side of the lever at its forward end. The position of this carrier is such, as shown in the drawings, as to lay its thread on the surface of the cloth just in front of the needle-threads, before the feed-motion takes place, so that by the feed-motion the said thread shall be carried back of the line of motion of the needles; and, in consequence, when the needles descend they

pass over and bind this upper thread on to the cloth, so that the needle-threads pass over it, whilst it passes around first outside of one needle-thread, and then around outside of the other. In this way, it will be seen, that if considerable tension be given to this laying-thread, it will be drawn tight from one row of stitches to the other alternately in opposite directions, as at  $a^1$  fig. 7, thus binding together the two rows of stitches on the upper surface of the cloth, as effectually as they are bound together below by the shuttle or its equivalent. But if a slight tension be given to the laying-thread, as the extent of motion of the carrier is greater than the distance between the two rows of stitches, the thread will be laid so as to occupy a much greater width than the distance between the two rows of stitches, thus leaving a series of loops, formed by this laying-thread, to project on each side of the two ranges of stitches, as represented by fig. 8. In this way, by varying the tension on this thread, embroidery can be laid and secured to the surface of the cloth, which, by turning the cloth, can be made to assume the lines of any desired design.

*Claim.*—1st. The employment of a supporting-tongue, substantially as described, placed between and in combination with the two needles, to support the cloth, or other substance, and prevent its being puckered during the operation of sewing and drawing the two rows of stitches tight, substantially as described.

2d. The employment of the guide-plates, substantially as described, to guide cloth that has been folded in making flat, lapped, or other analogous seams, as described, so that the row or rows of stitches shall be made at a regular and determined distance from the folded edge, as set forth.

3d. In combination with one or more eye-pointed needles and shuttles, or the equivalent therefor, for sewing one or more seams, the employment of a vibrating thread-carrier, for carrying a thread or threads alternately in opposite directions across the seam or seams, and laying it on the face of the cloth, substantially as described, so that it shall be secured to the face of the cloth by the needle-thread or threads, as described.

No. 13,687.—ISAAC M. SINGER.—*Improvement in Sewing-Machines.*—Patented October 16, 1855. (Plates, p. 92.)

$m$  is the shuttle,  $j$  the shuttle-race. There is a hole in the table  $f$ , directly under and in a line with the needle, to which is fitted the shield-plate  $o$ , made hollow for the needle to play in freely as it moves up and down. The hole in which the shield is fitted is just in front of and close to the shuttle-race; there is a narrow vertical slit  $t$  in the face of the shuttle-race corresponding with the cut-out portion  $q$  of the shield-tube when in the position represented in figures 1 and 2, so that the needle-thread, when the parts are in that position, can spread out from the body of the needle, that the point of the shuttle may enter between the needle and its thread; but when the shield is turned in the position in figure 3, then the slit  $t$  is covered by the shield which is thus interposed between the needle and the shuttle during the de-

scending motion of the needle, so that its point cannot strike the shuttle; but so soon as the needle has descended, the shield is turned out of the way, as seen in figures 1 and 2. The tension of spring *v* keeps the shield over slit *t*, and the shield is properly actuated by means of arm *x* and a spring-catch attached to and moving back and forth with the shuttle-carrier, operated in the usual manner.

*Claim.*—The method, substantially as described, of protecting the needle from all injury by the interposition of a movable shield between the needle and shuttle, which is removed after the needle has descended, to permit the shuttle to pass between the needle and the thread, as set forth.

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No. 13,727.—L. W. LANGDON.—*Improvement in Sewing-Machines.*—Patented October 30, 1855. (Plates, p. 92.)

When the needle passes through the cloth as it begins to recede, the thread is taken by the looper and carried across the path of the shuttle to the left side of the needle, thus forming a loop, where it is held until the shuttle passes through the loop, when the looper recedes to its position. As it recedes the motion of the shuttle is accelerated by the looper pressing on the rear end of the shuttle, and quickly sliding it forward in its bed, thus giving to the shuttle a greater velocity in passing the eye of the needle than at any other portion of its orbit; and as the shuttle passes around, the thread is caught on the snail-worm *h*, where it is held until the knot is tied, and then cast off in time for the stitch to be drawn up, thus making a half-knot stitch at every revolution of the shuttle. By changing the lever *o* to the right, the needle-bar is made to vibrate twice in the same line before feeding; and as the needle enters twice in the same place, and the shuttle in its revolutions passes through two successive loops without feeding the material forward, a whole knot is thus formed similar to one made by hand. The change of feed for tying half or whole knots is effected by means of the adjustable lever *o* operating on the slide-bar *P*, which moves roller *R* and changes its bearing alternately on the cams *T T*, thus tying a half or whole knot as desired. By moving lever *o* to the left a half knot is made, and by moving it to the right a whole knot is made. The length of the stitch is effected by means of the adjustable set-screw *R* at the end of the connecting-rod *q*. The step *Z*, (on rock-shaft *H*.) working in the end of connecting-rod *q*, serves to give the latter a vibrating motion to cause the needle to feed. *w* represents the half-knot, *x* the whole-knot stitch.

The inventor says: 1st. I *claim* making a stitch by tying a half knot or a whole knot, at the will of the operator, in the manner set forth and described.

2d. I claim the snail-worm on the revolving vertical face-plate for the purpose of holding the thread until the knot is tied, and the casting it off in time for the stitch to be drawn up.

3d. I further claim the vertical face-plate into which the shuttle is set for the purpose of carrying it around, and the reaction of the looper *K* for quickening the motion of the shuttle as it passes the needle, for the purpose of letting the looper pass out freely.

4th. I do not claim, broadly, feeding the cloth by the motion of the needle; but I do claim feeding the material by the needle when combined and arranged with the lateral motion of the needle in the manner described—that is to say, in connection with the rock-shaft H, with the sliding-step in the end, the connecting-rod *q*, the spring S, the set-screw and rollers R R, the cams T T, the sliding-bar P, and the adjustable lever *o*, as set forth.

No. 13,768.—ISAAC M. SINGER.—*Improvement in Sewing-Machines.*—Patented November 6, 1855. (Plates, p. 92.)

*b b* are two needles placed side by side in the needle-carrier *a*, and each carrying its appropriate thread similar to single-thread machines. The shuttle *c* is operated in the usual way, so that when the two needles perforate the cloth and carry their appropriate threads below the cloth and there form two loops, the shuttle, instead of passing through the loop of only one needle-thread, passes in succession through the loops of both needle-threads; and therefore, when the two needles are withdrawn, two stitches are formed, each with a needle-thread and a shuttle-thread, whilst at the same time the two stitches are connected by the shuttle-thread, which extends from the one stitch to the other.

*Claim.*—The employment of two eye-pointed needles, carrying its appropriate thread, and the two working in unison, substantially as specified, in combination with a shuttle, or equivalent therefor, to effect the concatenation of the two sets of stitches, substantially as specified and for the purposes set forth.

No. 13,856.—GEORGE W. STEDMAN.—*Improvement in Sewing-Machines.*—Patented November 27, 1855. (Plates, p. 93.)

The lever is moved about its fulcrum by means of a vibrating rod D. One arm of said lever carries the sliding-plate G, which is beat so as to extend up through a slot *m* in the cloth-plate *t*, and is spread out upon the upper side of said cloth-plate, sufficiently to cause it to pass over the needle-slot *i* in the feeding-plate, when moved forward. This portion *h* of the feeding-plate is situated immediately under and in contact with the cloth. The motions of the parts are so proportioned as to cause plate *h* to push against the thread when the needle is out of the cloth, and thereby move the cloth along. Fig. 1 represents a bottom view of the machine, and fig. 2 a top view of parts of it.

*Claim.*—Feeding the cloth or other material along by means of the thread, which is suitably acted upon for the purpose of tightening each stitch.

No. 13,966.—ISAAC M. SINGER.—*Improvement in Sewing-Machines.*—Patented December 18, 1855. (Plates, p. 93.)

The needle-carrier is pivoted at top, and is pressed towards one side by spring *e*; it is alternately moved to the other side against the spring by means of a lever *f*, which is pivoted at *i* and actuated from a cam.

The cloth to be sewed having been placed between the feed-wheel *m* and pressure-pad *n*, the needle punctures the cloth, and carries its thread to the under-side, where it forms a loop for the passage of the shuttle with its thread, and the needle then rises, forming the stitch. The feed-motion then takes place by which the cloth is advanced, and at the same time the cam acts upon lever *f*, and moves the needle-carrier and needle in the direction of the feed-motion, (until the carrier strikes stop-pin *k*), but to a greater extent than the distance that the cloth has been moved by the feed-wheel, and then the needle descends for the next stitch, which will be a back-stitch. The stitch having been performed and the needle withdrawn, the cam liberates lever *f*, the carrier and needle vibrate back, the cloth is again fed forward, and the needle descends again to make the third stitch like the one first described, and so forth.

*Claim.*—The mode of operation, substantially as described, for forming seams, by alternately making a loop forward, and then a short back-stitch by means of an eye-pointed needle, which merely carries a part of its thread through the cloth or other substance, that it may be interlaced or concatenated, as set forth, whether the said mode of operation be applied by the means specified or any equivalent therefor, as set forth.

No. 12,532.—FREDERICK S. STODDARD.—*Improvement in Machinery for Spinning Wool.*—Patented March 13, 1855. (Plates, p. 93.)

The regulating of the counter-twist and the preventing of too great a degree of twist getting back to the large part of the roving near the back drawing-rollers, is attained by the fingers *h* giving an angular direction to the roving *R* (see fig. 1). The fingers can be more or less elevated by means of set-screws *j*.

The cam *Q* is so arranged relatively to cam *K*, (which operates the ring-plate *I*), that as the ring-plate rises the brushes *q q* will fall back from them, and as the plate descends the brushes advance towards the rings. Thus, the travellers will (during the time the winding is performed on the lower and largest part of the cone) be in contact with, and receive a drag from, the ends of the brushes, gradually decreasing as the winding approaches the higher and smaller part of the cone.

*Claim.*—1st. Conducting the roving from the back *D D* to the front drawing-rollers *E E*, by employing a bridge *H* or rest, with fingers *h h* upon it, situated between the front and back pairs of drawing-rollers, for the purpose of governing the counter-twist so as to adapt a smaller portion of it to the part of the thread nearest the back rollers.

2d. Impeding the ring-travellers *o o* while winding upon the lower or largest parts of the cones, by means of a series of brushes *q q*, or their equivalents, operating substantially-as set forth, so as to gradually set the travellers free as the winding approaches the smaller or upper ends of the cones, thereby producing a uniform tension on the thread while winding.

No. 12,582.—AUGUSTUS E. BIGELOW.—*Improvement in Spinning Wool.*  
—Patented March 27, 1855. (Plates, p. 93.)

*a a* are the ring-doffers ; *b c* the rollers ; the lower, *b* (a metallic one), mounted like the stripper-roller of woollen cards, but not to act as the stripper ; and the upper, *c*, formed in the usual manner of a stripper, but placed above and resting on *b* with sufficient weight to hold the slivers as taken from the doffer. In front of the rollers are the flyers *d*, mounted in the usual manner of speeders. As the slivers are stripped from the rings of the doffers, they pass through the bight of the rollers, and thence through one wing of the flyers to the spool. The delivery motion of the rollers should correspond with the winding-on motion of the flyers and spools, plus the amount of shortening induced by the twist put in the roving. In this way the slivers stripped from the ring-doffers are delivered to the flyers, and by them regularly twisted, without drawing, and wound on to the spools ; and the bight of the rollers will prevent the twist from extending to and around the doffer, and will also prevent the drag of the winding-on from drawing the sliver from the doffer.

The inventor says : I do not wish to limit myself to the use of flyers in the practical application of my said invention, as any of the known equivalents for the flyer, or any improvement thereof which might be hereafter made, may be substituted for this one element of the combination.

But I *claim*, in the preparation of woollen roving, the combination of flyers, or the equivalent thereof, and their appendages, with the ring-doffer or doffers of a carding machine, by the interposition of a pair or pairs of rollers, substantially as specified, to deliver the slivers from the doffer or doffers, that they may be regularly twisted and wound on without drawing, as specified.

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No. 12,589.—ARAD WOODWORTH, 3d.—*Improvement in Machinery for Spinning.*—Patented May 15, 1855. (Plates, p. 94.)

By using two flyers, one within the other, and revolving them in the same direction, the inner one say with one-half the speed of the outer one, there will be produced a twist and a half in the yarns ; and if the inner flyer be revolved at a higher speed than the outer one, a portion of the twist which has been given to the yarns between the drawing-rollers and the neck of the outer flyer will be taken out, so that, by changing the gearing of the flyers, any desired twist can be secured.

By running the two flyers in opposite directions and at equal speed, three times the amount of twist can be secured at the same rate of speeding the machinery as can be obtained by the ordinary spinning apparatus, as one twist is given by the revolution of the outer flyer between the first set of drawing-rollers and the neck of the said outer flyer, and two twists between the first extra set of drawing-rollers and the neck of the inner flyer. By increasing the proportional speed of the inner flyer, the twist will be increased in the same ratio.

The arrangement of the flyers is apparent from the figure.

*Claim.*—The use of one or more inner flyers arranged in a sequence, one within the other, to revolve in the same or different directions, or at the same or different speeds, with the outer flyer, all the flyers acting continuously upon the roving yarns or material first received by the outer flyer, until the spinning or twist is completed, and the yarn or yarns are wound upon the spool or bobbin, thereby twisting and spinning more rapidly, and attaining any desired degree of twist in yarns, as hereinbefore more fully described.

No. 13,024.—WM. DARKER, Jr., assignor to J. B. THOMPSON.—*Improvement in Ring Spinning-Frames*.—Patented June 5, 1855. (Plates, p. 94.)

The nature of this improvement will be understood from the claims and engravings.

I *claim*, 1st, the method, substantially as described, of applying the rings to enable them to receive rotary motion—that is to say, attaching them to the top of metal sockets E, which are large enough to receive the bobbins, and are secured to tubes F, which revolve easily upon the spindles.

2d. The described method of attaching the bobbin to the spindle by a ball *f*, which drops in a slot at the top of the spindle, whereby the bobbin is properly secured, and the tube is allowed to be of proper length to steady the ring without interfering with the bobbin.

No. 13,726.—HENRY LUTHER.—*Improvement in Ring and Traveller Spinning-Frames*.—Patented October 30, 1855. (Plates, p. 94.)

D is the drum for driving the spindles, and is connected with the delivery rollers by proper gearing. Around a pulley fixed upon the shaft of one of the delivering rollers an endless belt extends, and also around pulley N upon a short shaft O. The screw P works the wheel Q, upon whose shaft there is a fixed cam S, which operates rod T and its arm *d*, and rod and lever *e* and V, which latter rests with one end on shaft W, and carries a pawl X, taking into ratchet Y. During each revolution of S, V will be depressed and raised so as to give motion to ratchet Y, and to operate the belt-forks, of which *f* is one, so as to move the driving-belts upon their cone-pulleys, and thus to increase the speed of the machine as may be required.

*Claim.*—Combining with the twisting mechanism and the delivering rollers or mechanism of a ring and traveller spring-frame mechanism, a mechanism substantially as described, which, while the cop or bobbin increases in size, shall so increase the rotary movements of the spindles and the delivering rollers as to maintain uniformity in the twist and strain of the *y* arm, as specified.

No. 12,467.—JOHN HASLAM & JAMES HASLAM.—*Improvement in Covering Thread with Wool or Silk*.—Patented February 27, 1855. (Plates, p. 94.)

The object of this invention is to produce a fabric of fine surface, the interior of it being composed of a less costly material.

A roving is passed through drawing-rollers on its way to a flyer, while a harder thread of less costly material is passed through the same rollers, or some of them, in such manner that the latter is guided so as to pass through in contact with the centre of the former, or nearly so, and is by the pressure of the rollers bedded into it. The combined threads then pass to a flyer, which twists the mass and completely covers the one material with the other.

*Claim*.—The method of bedding one thread into a roving or loosely twisted thread of another material, as also the covering of one thread by a roving or loosely twisted thread of a different material, substantially in the manner and for the purposes set forth.

No. 12,865.—JOHN M. HECK, assignor to HENRY TERRY.—*Improvement in Dressing Sewing-Thread*.—Patented May 15, 1855. (Plates, p. 94.)

The inventor uses the following compositions for sizing:

*For white thread*: Saponaria or soap-root, 2 ounces; salep root, 2 ounces; soap of Marseilles,  $\frac{1}{4}$  pound; loaf sugar,  $\frac{1}{4}$  pound; water, 10 pounds; gum arabic,  $1\frac{1}{2}$  ounces; white starch,  $1\frac{1}{2}$  ounces.

*For black thread*: Saponaria,  $\frac{1}{2}$  pound; salep root,  $\frac{1}{4}$  pound; water, 10 pounds; flax-seed,  $\frac{1}{4}$  pound; brown sugar,  $\frac{1}{2}$  pound; glue, 2 ounces; gum arabic, 2 ounces; brown soap, 2 ounces.

*For fancy colors*: Saponaria,  $\frac{1}{4}$  pound; salep root,  $\frac{1}{4}$  pound; water, 10 pounds; flax-seed,  $\frac{1}{4}$  pound; brown sugar,  $\frac{1}{2}$  pound; glue, 2 ounces; gum arabic, 2 ounces.

The inventor says: It is not the composition itself, used for the size, nor any particular arrangement of machinery for applying it, that constitutes the claim; but I do *claim* the using (or, in other words, subjecting the thread to the use, action, and friction) of a series of rapidly revolving brushes to polish, soften, and dry the thread after having been sufficiently saturated with a size or liquid, substantially such as described, whereby smoothness, lustre, pliability, and strength are imparted to the thread.

No. 13,267.—HAROLD KELSEA.—*Improvement in Trebling a Single-strand and Twisting Sewing-thread*.—Patented July 17, 1855. (Plates, p. 94.)

The strand S, on being applied to the mechanism, is first to be drawn in a direction towards the flyer G, and between the drum-rollers B and C. Next, it is to be doubled or carried backward between the drum-rollers and towards the rearmost of the hitching heads N O, and passed half way around the same, and carried again towards the flyer (see fig. 3). This trebles the thread. Next, the strand so trebled is



carried through the flyer, and attached to the bobbin. Next, the workman seizes that part of the strand which extends from the bobbin and spool R towards the flyer, and draws it in the form of a loop, and passes it underneath and between the portions of the strand that are held by the rearmost hitching-head of the endless band M. He next draws the loop against the said hitching-head, and backward towards the knob P, and hitches it over said knob (see fig. 4). Next, the flyer is put in motion, so as to cause it to be twisted and wound upon the bobbin; the draught on hitching-head O will move it along, together with the band M. In passing down the drum K, the knob O will slip out of the loopings of the strand. (leaving them enchainé or connected together like two links of a chain,) and the other hitching-head N will come up around drum L. The workman seizes the loop upon P, removes it from P and loops it over N, and seizes that part of the strand coming directly from the bobbin, and loops it, as above described.

The inventor says: I do not claim the combination of doubling, twisting, and reeling mechanism, whereby a strand may be doubled, twisted, and reeled, so as to be made into a skein.

But I *claim* the combination of the endless band M, its hitching heads or knobs N O, and the stationary frame hitching-knob, as applied together to the drum-rollers and twisting mechanism, and made to operate so as to treble and enchain a strand, substantially as specified.

No. 13,562.—ANSON A. SWIFT, assignor to HIMSELF and SAMUEL L. HILL.—*Improvement in Machinery for Trebling a Single Thread.*—Patented September 11, 1855. (Plates, p. 95.)

The thread S is drawn from bobbin A, and passed through the eye of guide D. Next, it is carried backward through such eye, and looped around the hitching-head C, and from thence is again carried forward through the eye, the front parts or ends of the trebled portions extending through the eye being attached to the periphery of the reel or winding-roller K. Next, the loop is removed from head C; and after again looping or doubling the strand near such loop, the second loop is passed through the first, so as to enchain the two. Next, the first loop is carried to and looped on the hitching-head B, and the new loop is carried back and hitched upon the head C, with the strand extending partially around the head B (see fig. 3). All this time the carriage C has been close or nearly up to frame E. The carriage is next moved away from frame E as far as required. This will draw the thread from the bobbin A, and treble it between G and E. Next, either the loops on hitching-head B should be removed from it, or such head should be moved downward, so as to discharge them from itself. Next, the carriage should be moved towards the frame, and during such movement the reel K rotated so as to take up the enchainé and trebled portions of the thread.

I do not claim the principle of trebling a thread or strand of silk by enchainé loops formed therein; nor do I claim the combination of a stationary knob, an endless band, and two hitching-heads or knobs (the

same being movable) fixed to said band at equal distances apart, such being the subject of the patent of Kelsea; but as I employ but two hitching-heads only, and apply one of them and the strand bobbin in a frame, to have a reciprocating motion, as described, while the other and the reeling mechanism I arrange in a stationary frame, I *claim* such an improved arrangement and combination of the hitching-heads, movable and stationary frames, whereby I am not only enabled to dispense with an endless band and one hitching-head, but employ a reciprocating frame, and thereby afford an attendant on the machine the advantage of being near the reeling mechanism, as explained.

No. 13,795.—JOSEPH MORSE.—*Improvement in giving Tension to the Endless Band of Throstle-frames*.—Patented November 13, 1855. (Plates, p. 95.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim driving all the spindles or throstles of a spinning-frame by means of a single endless band, as I am aware that an endless band has been used for that purpose, but without success, owing to the want of proper means for compensating, for stretching, and shrinkage, which rendered it more objectionable than the employment of a separate band for each spindle; neither do I claim, of itself, the keeping of a band of a machine tight by a weight, as I am aware that a weight has been employed for that purpose in some machines. But I *claim* the arrangement of the endless band *b b b*, to run to and fro between every one of the spindles and the drum D, and around a pulley *d* carried by a slide *e*, which is movable on suitable guides, and has a weight attached to it by a cord *h*, so arranged as to draw the said slide in the proper direction to produce tension on the band, substantially as described.

No. 13,350.—JNO. A. ELDER and EPHRAIM WOOD.—*Improvement in Machinery for Sizing and Dressing Warps*.—Patented July 31, 1855. (Plates, p. 95.)

When the yarn 14 to be dressed has the right strain on it, the hook E is kept out of the teeth of the ratchet-rod by the tension of the yarn; thus leaving weight 15 unmoved as the catch makes its movement with the rod R, which latter is confined to a horizontal sliding-motion within guides 28, fastened to the frame of the machine; rack P is also held in guides *s*, projecting from the frame of the machine. When the yarn is too taut, it will raise the roll *u* and its frame 7, and rod G and hook E; and when the yarn is too slack, the roll *u* will sink and lower the hook E. The hook E, taking into one of the racks on bar P, will move the said bar P in or out, and move weight 15 on lever-arm 16 (which latter is pivoted in 21 to the frame of the machine) in or out, and thereby press the friction-roller 10 (which turns loosely on the axis of size-roll 6) more or less against the end of the size-roll C. Lever 18 is pivoted in 30, to the frame of the machine.

The inventors say: We are aware that other modes of construction, and other forms and positions of the several parts, might be adopted to produce the same results from the same acting principles; for instance, springs may be used instead of weights, and screens may be used instead of ratchets and catches for increasing the power on friction-straps. We do not claim these devices as such, or any of them.

We *claim* the regulation of the speed of the yarn-beam and rollers of the dressing-frame by the tension of the warps, in the manner substantially as described, namely: by the combination of the vibrating-roller U with the rollers L and I, rod G, and the hook E, or the equivalents thereof; and these in combination with the ratchet P, levers 16 and 18, friction-pulley 10, and weight 15, or their equivalents, when arranged in the manner substantially as described.

No. 12,175.—JOSEPH S. WINSOR.—*Improvement in Machines for making Weavers' Harness*.—Patented January 2, 1855.

A description of this machine, or a representation of it by engravings, would be too extensive to be given in this Report.

The inventor says: I do not limit myself to the special construction or arrangement of parts as described, but I claim all merely formal variations, performing the same mode of operation by equivalent means.

What I do *claim* is the mode of operation, substantially as specified, by means of which each twine is formed in a loop, and the spool, or its equivalent, carrying such twine, carried through such loop to form a knot, and then the spool, or its equivalent, which carries the other twine, passed through such loop that the twine thus carried through may be gripped therein when the knot is drawn tight, thus forming the eye of two twines with a knot in each gripping the other twine, as herein set forth.

Also, the mode of operation, substantially as herein described, for determining the size of the eyes by closing the knots on the two fingers, or their equivalents, whereby the knots are closed at the proper place on each twine, the two sides of each eye made of equal length, and any desired number of eyes of the same size, as set forth.

Also, in combination with the fingers, or their equivalents, on which the knots are closed, the discharger, or any equivalent therefor, by means of which the knots are discharged from the said fingers as they are drawn tight, as set forth.

Also, in combination with the mechanism for forming the knots, substantially as herein described, the employment of pincers, substantially as described, or any equivalent therefor, for holding the twines tight after the knots at each end of the eye have been closed, and during the operation of drawing the twines tight around the bands, as set forth.

Also, the mode of operation, substantially as described, by means of which the twines are wrapped around the bands in succession, and formed each into a loop, through which the spool, or its equivalent, for carrying the twine, is passed to effect the tie, substantially as described.

Also, the mode of operation, substantially as described, for forming

what is termed the leese of the harness, by reversing the motions of the spools, or their equivalents, for carrying the twines, thus carrying the twines alternately on opposite sides of one band, as set forth.

Also, the method, substantially as herein described, of mounting the heddles as they are formed on the slats or rods, by suspending the said slats or rods above the machine and attaching the bands, to which the heddles are tied in the process of formation, to a sliding-bar, or its equivalent, which is elevated as the heddles are formed, as set forth.

Finally, the method of marking every nineteenth (or any other number) of heddles, by means of the marker receiving motion in the manner substantially as specified, or by equivalent means.

No. 13,290.—ALBERT REINHARDT, assignor to NAs. SCHLUMBERGER & Co.—*Improvement in Machinery for preparing Wool for Combing*.—Patented July 17, 1855. (Plates, p. 95.)

The material is spread on the endless feeding-apron A, and passes through two guide-rollers B and two pairs of feed-rollers C C<sup>1</sup>, on to the working-drum D, and is finally received between the drawing-off rollers F F. The feeding apparatus receives its motion from the drum-shaft by means of intermediate wheels, which, however, can be thrown out of gear by throwing the frame M, which supports the feeding apparatus, into the position represented in dotted lines in the engraving. This motion will throw the drawing-off rollers, which have their bearings in the same frame M, into operation with the surface of the drum-roller. The drawing-off rollers receive, at proper times, regular revolving motion by means of band G.

*Claim.*—The combination of the feeding, working, and drawing-off apparatus, constructed and arranged in the manner set forth—the feeding and drawing-off apparatus being so combined as to be alternately brought into action with the working-drum, and brought to a state of rest when not in working contact with the drum, as specified.

No. 13,870.—PETER FAIRBAIRN and JOHN HARGRAVE.—*Improvement in Wool-combing Machines*.—Patented December 4, 1855. Patented in England, November 6, 1852. (Plates, p. 95.)

The foremost of the gill-cylinders takes up the staple from a pair of feed-rollers *e e*, and presents it to the second gill-cylinder, which by rotating at an increased speed takes up the staple and delivers it to a pair of stripping-rollers *k*, from which the staple may be conducted through a trumpet mouth and delivered thence in the form of a sliver. The ends of the gill-bars *h* slide in an eccentric groove, which are cut in disks attached to the framing of the machine at both ends of the gill-cylinders. Thus the gill-bars will be driven out so as to take up the staple from the rollers *e e*.

The inventors say: We do not confine ourselves to the precise arrangement of machinery as described;

But we *claim*, in machinery for opening, combing, and drawing wool, flax, and other fibrous materials, combining in one and the same machine two or more rotary gill-cylinders, fitted with advancing and receding gills, and rotating at different speeds, for the purposes set forth.

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#### IV.—CHEMICAL PROCESSES.

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No. 12,988.—LEANDER R. STREETER, assignor to HIMSELF and IRA LEONARD.—*Improvement in Amalgamating the Precious Metals*.—Patented May 29, 1855. (Plates, p. 96.)

The cylinder A is to be filled with ore, and then the cap C to be secured; then the air is exhausted by means of pump D, leaving the stop-cocks H I open until the air is exhausted from the mercury-tube F, and the tube is filled with mercury; then I is closed, and, with H open, the air is exhausted from the cylinder. Then H is closed, and I opened; and with pump E the cylinder is filled with mercury to the required degree of pressure. This process, as the inventor states, amalgamates the mercury perfectly, leaving no particle of the metal unamalgamated.

*Claim*.—Forcing mercury at any required degree of pressure into ores to be amalgamated when the ores are enclosed in a mercury-tight cylinder or receiver, substantially as and for the purpose set forth.

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No. 12,160.—ADOLPH HAMMER.—*Improvement in Fermenting-Tuns for Beer*.—Patented January 2, 1855. (Plates, p. 96.)

The wort and yeast (with the proper degree of temperature) are run into the tun, until the liquor reaches the upper side of the cover, which rests upon cleats *a*, thus closing up the continuous space between its edge and the inner side of the tun. The upper end of the conduit-pipe C being now flush with the upper side of the cover, and having been previously stopped with a plug, the fermentation of the wort in due time proceeds. During the process the yeasty froth works up, and with the generated carbonic acid gas fills the space above the surface of the cover—thus expelling all the atmospheric air and the carbonic acid gas and yeast constantly, by forcing their way between the edge of the cover and the sides of the tun, and accumulating over the cover and within the space above the same, which space being amply sufficient to contain all the yeast and a large portion of the carbonic acid gas, there is thus necessarily formed a perfect medium of protection to the wort from the chemical action of the atmosphere: the carbonic acid gas, being of greater specific weight, necessarily has a tendency to fall rather than to rise, and hence the

space above the cover will be entirely filled before any of the gas can leave the tun. After the fermentation has ceased, the plug in the upper end of the conduit-pipe C is withdrawn; and the yeast and remaining carbonic acid gas above the cover pass down through the pipe into a waste-trough, and the liquor being now fined, is conveniently run into the vat or barrels.

The cover B being somewhat smaller than the interior of the tun, when it rests upon the cleats *a*, there is left a continuous circular open space. The conduit-pipe C is fixed water-tight into the bottom of the tun, and its upper end fits accurately into the centre of the cover B.

The inventor says: I do not claim simply a large vessel or tun for fermenting malt liquors, as vessels of various forms and sizes have been used heretofore for other purposes;

But what I *claim* as my invention, and desire to secure by letters patent, is the application and use of the adjustable cover B and the conduit-pipe C, constructed and arranged substantially as described and illustrated, in combination with the tun A, or any other suitable vessel, substantially and for the purpose as described.

No. 12,535.—CHAS. CUNNINGHAM, assignor to JNO. C. PEDRICK —  
*Improvement in Benzole Vapor Apparatus.*—Patented March 13, 1855.  
(Plates, p. 96.)

The disseminator consists of perforated disks *o*, arranged on revolving shaft *n*. Sponges *p* are attached to the peripheries of the disks, to take up and hold in suspension a portion of the contents of the reservoir *k* through which they revolve, so that the current of air driven into the reservoir, and coming in contact with the innumerable fluid surfaces thus exposed, shall generate to the best advantage the illuminating gas which passes out to the burner through pipe *t*. *a* is a common meter, the wheel of which is propelled by a cord *g*, a weight, and proper gearing. The air enters through an opening A on one side of the meter, and passes out at the other through pipe *i* into reservoir *k*. Reservoir *k* is surrounded by a case *u* containing water for the purpose of sustaining the temperature of the contents of the reservoir. When the apparatus is exposed to unusual cold, this water may be warmed, either by using the swinging-burner *v* or a piece of heated freestone, to be secured to the under-side of the heater or projection *w*.

*Claim.*—1st. The combination of the heater *w* and the swinging gas-burner *v*, or of the induction air-pipe A and any one of the burners of the apparatus, with the water-vessel *u*, the reservoir *k*, or the meter *a*, substantially as herein described, for the purpose of keeping the contents of the vessel containing the benzole or light-producing liquid at a given temperature.

2d. The combination of the reservoir *k*, and the rotary disseminator *n o*, with an ordinary rotary meter-wheel, substantially as described, for forcing air through the hollow shaft, or its equivalent, into the reservoir *k*, for the purpose of vaporizing the benzole of the latter vessel.

3d. The particular mode of making the rotary disseminator *n o*, substantially as described, and for the purposes specified, not meaning to claim the use of the hollow shaft for evaporating saccharine fluids.

4th. The application and use of the meter wheel with its case and contents as an air-blast apparatus, operated by weights or otherwise, not meaning to claim the method of using the meter for measuring gas.

No. 12,709.—CHARLES T. APPLETON.—*Improvement in Bleaching Apparatus*.—Patented April 17, 1855. Patented in England, August 30, 1853. (Plates, p. 96.)

The goods being placed in vat B, cold water is admitted sufficient to cover the goods; then, the air having been exhausted from vessel F, cock *n* is opened and the air is exhausted from vat B, which causes the globules of air within the pores of the goods to expand and escape. The air is then admitted, and the liquid is forced by the atmospheric pressure into the pores. The water is then heated, and the goods are allowed to steep. Then the air is exhausted from F and B, and cock *m* being closed to prevent admission of liquid to the air-pump, cock *e* is opened, and the water permitted to flow through the goods in F and B; and then, by opening cocks *a* and *e*, the water is permitted to flow off. This is repeated till the goods are thoroughly washed. Alkali is then introduced, and the receiver again exhausted to bring the liquid in immediate contact with the fibres. The goods are then boiled, the alkali run off, and water introduced to wash the goods again. Chlorine solution is then admitted, and the air again exhausted. Then the chlorine is drawn off, and the sour run in. The goods are lastly washed as before, all being done without removing the goods from the vat.

*Claim*.—The combination of an air-tight vat, for receiving and containing the goods, an apparatus for exhausting the air therefrom, and the necessary vessels containing the liquids used in the process of bleaching; whereby the various steps may be performed in a much shorter space of time than has heretofore been required, and without removing the goods from the vat, substantially as herein set forth.

No. 13,008.—HARRISON LORING.—*Improvement in the Apparatus for Bleaching Rags*.—Patented June 5, 1855. (Plates, p. 96.)

By admitting steam to all parts of the bleach the rags are prevented from being forced into one end of the bleach, and thus the bleaching-liquor is allowed to perform its functions more thoroughly.

The inventor says: I *claim* the manner of introducing steam to all parts of the revolving bleach at the same moment, by means of a perforated pipe attached to the interior of the bleach, the adjacent ends of which are connected by a socket-joint to a stationary induction pipe, arranged as set forth, so as to allow of the expansion, contraction, and movement of the bleach without derangement, for the purpose and in the manner substantially as described.

I do not claim the revolving bleach, or bleaching by steam at a high temperature, as I am aware that it has been known and patented before.

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No. 13,928.—WILLIAM M. WELLING.—*Improvement in Devices for Bleaching Ivory*.—Patented December 11, 1855. (Plates, p. 96.)

The ivory plates *c* are inserted edgewise between the pins 2 2 and the pyramidal glass case *o* shut over them; the glass case is then exposed to the action of the sun's rays, and is to be placed in nearly the north and south line, so that in the morning the sun will shine on one side of the ivory plates, while the other receives the reflected light and heat from the pyramidal glass case and the next plate of ivory; and in the afternoon the opposite action takes place.

*Claim*.—The method described and shown of bleaching ivory plates by so placing and sustaining them on their edges, in a suitable case, that the sun's rays shall act with uniform power, and bleach said plates equally on both sides, in the manner and as specified, thereby dispensing with the usual method of turning the plate over to expose alternately the flat side to the action of the light, and preventing warping or damage to the ivory, and accomplishing said bleaching operation in far less time and more perfectly.

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No. 13,633.—THOMAS BELL and HENRY SCHOLEFIELD.—*Improvement in the Manufacture of Borax from native Borate of Lime*.—Patented October 9, 1855. Patented in England, July 5, 1854.

The nature of this improvement is clearly set forth in the claim.

The inventors say: We do not claim making borax by combining the boracic acid of commerce with a solution of carbonate of soda, and boiling and evaporating the same; but we *claim* our mode of manufacturing borate of soda from borate of lime, the same consisting in boiling the borate of lime in water and an acid, separating the lime and other foreign matters, adding a saturated solution of soda to the liquid, boiling the compound, separating the impurities or foreign matters therefrom, and subsequently evaporating the clear liquor and crystallizing out the borax therefrom, as specified.

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No. 12,193.—LEWIS C. ASHLEY.—*Improvement in Candle-mould Machines*.—Patented January 9, 1855. (Plates, p. 96.)

The apparatus for centring, cutting, and holding the ends of the wicks, so as to draw the candles from the moulds B B, consists of a plate H, which, by means of a thumb-screw I, can be made to slide between the plates F, which are held in place by a recess in the frame A, into which recess they fit. Both the plates F and H have notches *c c*, and *e*; the notches being the same distance apart that the centres of the candle-moulds are apart from each other. One of the edges of



each of the upper grooves *c* is finished as a knife-edge to cut the wick; the wick being passed through the notches, and the thumb-screw being properly turned, the wicks will be centred, cut, and held by means of the notched plates. The wick passes underneath the moulds through holes in a similar pair of stationary plates *g g* and a sliding-plate *f*. By means of slightly drawing back the plate *f*, and confining it by a pin *k*, the wick will be tightened.

*Claim.*—1st. The apparatus *F* for centring, cutting, and holding the ends of the candle-wick; said apparatus being constructed of stationary and adjustable plates *G* and *H*, with centring and cutting notches on the stationary plate, and holding or tightening notches on the adjustable plate, constructed and operating substantially in the manner and for the purpose as herein specified and shown.

2d. The wick tightener *J*, for tightening the wicks, being constructed and arranged substantially in the manner as herein shown and described.

No. 12,492.—JNO. STAINTHORP.—*Improvement in Machines for making Candles.*—Patented March 6, 1855. (Plates, p. 97.)

The pistons *D* are secured to the slide *B*; *C* are the moulds, which are fitted at their tips for the pistons or centre moulds, and secured firmly in stand *A*. The pistons are provided with tip-moulds *E*, and are hollow for the wick to pass through.

Treadle and cord *J* serve to raise the slide *B*, and with it the pistons, thereby elevating the candles into the holes *Q* in the racks *M*. When the candles are ready for elevating, the tip-bars *P* are thrown out (see dotted lines *Y*); when the candles *S* are elevated, and before the pistons are lowered, the racks are inclined to the right and left sufficient to allow the tip-bars to swing under, (see fig. 1,) when the racks are raised perpendicular, the candles falling into the cavities *R* in the tip-bars when the pistons are dropped, thereby straining the wicks. The position of slide and pistons when elevated is represented in fig. 2 in dotted lines. Fig. 3 represents the wick-clasps, which are secured to the under-side of the tip-bar for the purpose of securing the upper ends of the wicks, in case the candles are to be taken out of the racks before filling the moulds. The clasping is performed by passing the clasp-bar *c* in the direction of the arrow.

The inventor says: I *claim*, first, the employment of the pistons *D* *D*, formed at their upper ends into moulds for the tips of candles, in combination with stationary candle-moulds, to throw out the candles in a vertical direction, substantially as set forth.

I do not claim the use of clasps, separately considered; but I claim, secondly, the combination of the rack, tip-bar, and clasps, constructed and arranged substantially as described, and for the purposes specified.

No. 13,334.—WILLIS HUMISTON.—*Improvement in Candle-Mould Apparatus*.—Patented July 24, 1855. (Plates, p. 97.)

B are the candle-moulds, D a series of hollow pistons arranged in sliding frame E, the pistons being provided with loose tops *a* sliding within the hollow pistons a short distance. When the candles are moulded, their tips rest in these loose tops *a*; and when the candles are to be forced out, the pistons are let down whilst the tops *a* remain in contact with the candle—the lugs *c* and slots *e* admitting of this movement; this allows the pistons play enough to be brought up suddenly, which starts out the candles. When the candles are raised up above the moulds, they pass between clamps F, which (instead of catching the wicks as usual, which brings them so near the moulds as to obstruct the next pouring) seize the candles themselves, and hold them until the wicks are cut and the clamp and candles removed and replaced by another.

The inventor says: I am fully aware that pistons have been used in connection with candle-moulds, for the purpose of forcing out the moulded candles; this I do not claim.

But I *claim*, making the top of the piston, in which the tip of the candle rests, movable on the piston, so that it may remain in contact with the candle, whilst the piston is slightly depressed or lowered, to bring it up with a sudden blow to start the candles from the moulds, substantially as set forth.

I also claim, in contradistinction from clamping the wicks, or from the tip-bar or supporter, the clamping of the candles themselves in the position in which they are forced from the moulds, and thus holding them until ready to be removed; by which means I retain greater facilities for pouring into or filling the moulds, and avoid the danger of breaking the candles or their tips, substantially as described.

No. 13,973.—LEWIS C. ASHLEY.—*Improvement in Candle-Mould Apparatus*.—Patented December 25, 1855. (Plates, p. 97.)

The wicks *x* are led through the moulds B, a little beyond the plates *b* and *c*; which latter, when in contact at their edges, leave small openings through them corresponding to the centre lines of the moulds. The stoppers *a*, which are attached to a frame K, are then simultaneously raised out of the ingate openings by means of a hand-lever attached to said frame. The melted tallow is then poured into the troughs F, wherefrom it flows through the ingate openings into the moulds. While it is yet in a fluid state, the stoppers *a* are moved back into their seats by means of said hand-lever, so as to leave the candle smooth at the place of the ingate opening; the lever L is operated, which will draw the plates *b* and *c* apart, and leave the rear end of the candles free, for the purpose of drawing them out of the moulds.

The inventor says:

I *claim* the combination of candle-moulds which have an opening in the side or tip end of each mould to admit the melted tallow, with a device for temporarily closing the large open ends of said moulds

and simultaneously centring the wicks thereat, substantially as described, to make the butt ends of the candles with a smooth finish; and this I claim, irrespective of the mode in which the parts of the candles at said side openings are completed.

And I claim the combination of said combined mould and device for closing the large ends thereof, with the stoppers or slides for temporarily closing the side or tip ingate openings in said moulds, substantially as described, to complete the formation of the parts of the candles at said ingate openings, by which the operation of scraping, to complete the finish of the candles at these places, is avoided.

No. 12,153.—ROBERT ARTHUR.—*Improvement in Self-Sealing Preserve Cans.*—Patented January 2, 1855. (Plates, p. 97.)

This improvement consists in matting the cans with an annular groove at or near the outer edge of the top, furnished with a cover, the rim of which passes loosely into the groove. The groove is to be filled with some composition which melts only at a higher temperature than that at which it is necessary to seal the vessel.

This can offers the advantage of being perfectly accessible; and as there is no obstruction from the bottom to the opening, its contents can readily be removed, and it can be thoroughly cleansed after the cover is removed.

*Claim.*—A new manufacture: a vessel made with a groove to surround its mouth, prepared with cement, and ready for hermetical sealing; but to hermetical sealing itself I make no claim, neither do I claim a ground-stopper or cover and seal for hermetical sealing, whether the ground surfaces of such stopper or cover, and its seal, be prepared with cement or not.

No. 12,151.—ANDREW H. WARD, assignor to WARD & BOOTT.—*Improvement in Compositions for Unhairing Hides.*—Patented January 2, 1855.

After steeping hides (with the hair on) for about two days in a solution of carbonate and sulphate of soda, the inventor asserts, the hair may be removed from it by the usual process of beaming, the skin being left in a much better state for being tanned than when it sweated or prepared with lime, in the usual way.

(No illustration.)

*Claim.*—The application of a compound solution of carbonate and sulphate of soda to hides and skins, for the purpose of loosening their hair, and preparing them for the reception of tannin.

No. 12,212.—CHARLES MOREY.—*Improvement in Re-working Hard Rubber Compounds.*—Patented January 9, 1855.

The material is placed in an iron mould, closed and subjected to a powerful pressure. It is then placed between two red-hot iron plates,

and thus again introduced into the press. When the mould is sufficiently hot, it is put into cold water until it has become cool. Then the article is taken from the mould. The soldering is performed in the following manner: The broken parts are scraped off; dust of hard vulcanized India-rubber is introduced between the scraped parts; the whole is submitted to a high degree of heat and pressure, whereby the broken parts are united in a perfect manner.

*Claim.*—1st. Forming or moulding scrapings, filings, dust, powder, or sheets of hard vulcanized India-rubber, into a compact solid mass, by means of a high degree of heat and pressure, as above described.

2d. The application of dust, powder, filings of hard vulcanized India-rubber, for soldering or uniting hard vulcanized India-rubber.

No. 12,368.—L. WOODBURY FISKE.—*Improvement in Compositions for Bleaching and Stuffing Leather.* Patented February 6, 1855.

The *set* is composed of four gallons of clear water, at from 130° to 140° Fahrenheit, to every four pounds of sulphuric acid, of about the specific gravity from 1.823 to 1.847, or 65° to 66° Reamur; one half-pound of dissolved alum; one half-pound of dissolved borax; and from three to five pounds of common salt. The *bleach* is composed of four gallons of water of 140° Fahrenheit for every six pounds of sugar-of-lead, and one fourth-pound of common chalk, dissolved in dilute muriatic acid. For *stuffing*, the inventor uses for every three gallons of common stuffing one-fourth of a pound of finely powdered alum, one-fourth of a pound of finely powdered borax, one-fourth of a pound of finely powdered sugar-of-lead, dissolved in a quart of hot water. This solution is then mixed with one pound of superfine flour, and to it added a half tea-cup-full of gum-tragacanth, dissolved in hot water to the consistency of thick mucilage (a table-spoonful of alcohol being added to each half-pound of gum).

The inventor says: I do not intend to claim the use of the ingredients herein named separately, or in other combinations employed for the same or analogous purposes; but I *claim* the improved mode of bleaching and stuffing leather, before described, by using the bleaching and stuffing compounds made of the ingredients, or their equivalents, in the proportions and in the mode specified, substantially in the manner and for the purposes set forth.

No. 12,519.—EDWARD F. OVERDEER.—*Improvement in Fire-extinguishing Compositions.*—Patented March 14, 1855.

The inventor says: I am aware that pearl-ash and other salts, either alone or mixed with other substances, have been used to saturate or cover combustible articles to render them fire-proof. Therefore, I do not claim the use of pearl-ash or saleratus for the purpose of preventing ignition or rendering combustible articles fire-proof; but I *claim* the employment of a solution of pearl-ash in water in the proportion of sixteen pounds of pearl-ash, or thereabout, to one hundred gallons of water, as a substitute for water in extinguishing fires.

No. 13,420.—FRANCIS BASCHNAGEL.—*Improvement in Compositions for Treating Rubber and Gutta Percha.*—Patented August 14, 1855.

One hundred pounds of vulcanized rubber or gutta percha (in pieces) are mixed with one-fourth of one pound of alcohol absolutus and ten pounds of carbon bisulphuratum, and the vessel containing the same is then hermetically closed and so kept for two hours. Those proportions, however, may be changed.

The inventor says: What I *claim* is not an improvement in the restoration of caoutchouc, gutta percha, and other similar gums, "by first treating the vulcanized gum with alkalies," &c., "for extracting the sulphur," &c., "and then submitting the mass to the action of heat and turpentine, or any other liquor known to be a solvent of the gum in its natural condition"—all of which quotations are in the patent granted to Feuchtwanger & Beers, assignees of Beers, May 29, 1855, being "an improvement in de-vulcanizing India-rubber."

But I *claim* the conversion or restoration of caoutchouc or gutta percha, whether they have been vulcanized or not, into a soft, plastic, and workable state, (by a new combination of chemical agents,) so that they may be re-manufactured in a state already vulcanized or not, according as the substance converted or restored had or had not been vulcanized; the substances which I use for this purpose being bisulphurate of carbon in conjunction with alcohol absolute, and not common alcohol, without the addition of any other chemical agent, and without the application of heat, as substantially set forth.

No. 13,733.—JAMES WEST.—*Improvement in Roofing Compositions.*—Patented October 30, 1855.

India-rubber dissolved in spirits of turpentine, gum-shellac dissolved in alcohol, gutta percha dissolved in linseed oil, "puzzolan" (composed of pulverized glass, quick-lime pulverized and sifted, and any kind of clay well vitrified and pulverized) and "smalt" (composed of vitrified glass, sand, flint, or any equivalent pulverized substances which will withstand the action of the atmosphere), and naphtha, or coal-tar. The proportions are: Sixteen ounces naphtha, half an ounce of India-rubber, half an ounce of shellac, and half an ounce of gutta percha, dissolved in the above-mentioned solvents, two ounces of puzzolan and two ounces of smalt.

The solutions of India-rubber, gum-shellac, gutta percha, and the naphtha, are to be warmed to blood-heat; then the puzzolan to be mixed therewith, and immediately to be applied to the roof and rubbed smooth; then the smalt is to be sifted on.

*Claim.*—The use of lime in combination with the rubber, gutta percha, and shellac solutions in the composition, as set forth, for the purpose specified.

No. 12,812.—ALEXANDER C. BLOUNT.—*Improvement in preparing Turpentine for Distillation*.—Patented May 8, 1855. (Plates, p. 97.)

The crude turpentine is placed and melted in the innermost, *a*, of the sieves. The impurities which are not arrested in the sieves will subside in the concave bottom of the cylinder A, from whence they can be drawn off by pipe L. The turpentine passes from A through pipe E into receiver F, and therefrom into still H.

*Claim*.—Freeing the crude turpentine of chips, bark, straw, and other impurities and coloring matters, before introducing it to the still, by melting it in a cylinder or vessel A, which contains one or more sieves *a*, *a*<sup>1</sup>, *a*<sup>2</sup>, and is arranged in such manner that the melted turpentine may run from it to the still by gravitation, substantially as herein described.

No. 13,358.—STEPHEN MEREDITH.—*Improvement in Distilling Coal with Hydrogen Gas*.—Patented July 31, 1855. (Plates, p. 97.)

The pipe E passes through the oven F in a serpentine form, and connects outside with pipe G, which runs over the whole of the retorts, and is furnished with a branch *a* to lead to every retort. This pipe conveys the hydrogen gas to the retorts A, and heats it in its passage through the oven. The hydrogen, after condensation has been effected, is to be conveyed by suitable means to burn it under the retorts A, or under the stills to be employed in the further purification of the liquids, which are to be re-distilled with about one-tenth part of their bulk, or with ten gallons of the milk of lime to every hundred gallons of the liquids, when they will be sufficiently pure for common use.

*Claim*.—The production of naphtha, benzole, and other hydro-carbon liquids, by the distillation of cannel or other bituminous coal, in an atmosphere of heated hydrogen gas, or in a retort to which a stream of heated hydrogen gas is admitted during the distilling process, substantially as and for the purposes set forth.

No. 12,516.—JAMES MCCrackEN.—*Improved Evaporating Apparatus*.—Patented March 13, 1855. (Plates, p. 97.)

The steam which is to heat the liquor passes through pipes *i*<sup>1</sup>, thereby filling the heating-cylinders *e*. These cylinders have vertical tubes inserted which are open at top and bottom, so as to allow the liquor (which is placed in pan C, and surrounds the cylinders *e*) also to fill said tubes. Steam-pipe *i*<sup>2</sup> leads from the upper head of the first pan (connecting with the second pan by means of an intermediate vertical pipe *i*<sup>3</sup>) to the condenser or third pan, which is open at the top and contains a metallic cylinder, similar to those in the other pans, only of much greater length and diameter, sufficient to condense the amount of steam conveyed from the two pans to the condenser.

*Claim*.—The arrangement and use of a set of metallic cylinders, containing vertical tubes, as described, in connection with the mode of

conveying the escape steam from the pans to the condenser, in the manner and for the purpose set forth.

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No. 12,329.—THADDEUS SELLECK.—*Improvement in Methods of Working Franklinite Ore.*—Patented January 30, 1855. (Plates, p. 98.)

*a* are the walls of the furnace; *c* the crucible. The charge should never be carried above the line *e*. Just above *e* is a contraction *ff*; and above this the walls spread out, that the gases may have room to expand and mingle with atmospheric air, which is forced in through tuyeres *h h*. Pipes *m* communicate with any suitable apparatus for collecting the white oxyd of zinc, and for separating it from the gaseous products of the furnace. Draught is admitted at *j* to start the furnace; *k* is a damper, which is kept closed when the furnace is working. The charge is introduced through apertures *l*, which are then closed.

The tangential direction of pipes *h* serves to create a whirling motion just above the charge, so as to insure a proper mixing up of air and vapors.

*Claim.*—The process of reducing Franklinite ore to obtain iron and the white oxyd of zinc therefrom, by working it under a lighter heat, in a vertical-walled, low cupola furnace, substantially as described.

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No. 12,498.—DEXTER H. CHAMBERLAIN, assignor to HENRY WOODWARD.—*Improvement in Apparatus for Purifying Illuminating Gas.*—Patented March 6, 1855. (Plates, p. 98.)

The float *E* forms a part of the agitator, and serves to give to it a sufficient buoyant power to enable it to rotate in a liquid that may be placed in vessel *A*.

The inventor says: I do not claim a gas-purifying apparatus composed of a closed cistern, provided with ingress and egress pipes, and an annular float having an inverted concentric groove or chamber, and numerous passages leading therefrom, whereby the gas is suffered to flow into said chamber while the float is resting on a purifying fluid, and is caused to raise the float so as to escape from its chamber and pass over the surface of the liquid in numerous streams, the float having no rotary movement whereby it is caused to stir and agitate the cleansing liquid;

But I *claim* an improved gas-purifying apparatus, arranged within the closed cistern and made to distribute gas in contact with the liquid therein, and to be put in rotation by the gas so as to stir up and agitate the said liquid, as specified; the said apparatus consisting of a wooden or other proper float *E*, and a separate gas receiving and discharging apparatus, composed of the disk *F*, the tube *L*, and its receiving and discharging scroll *G*, or the equivalent therefor, such a mode of constructing the agitator having important advantages over a simple float, having an annular chamber formed within it, and made, while resting on a purifying liquid, to receive gas and to be raised by it, and so as to permit it to

escape in numerous thin streams and over and in contact with the liquid.

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No. 12,711.—HENRY P. M. BIRKINBINE.—*Improvement in the Construction of Gas Retorts*.—Patented April 17, 1855. (Plates, p. 98.)

The material from which gas is to be made is put into the lower compartment B, from which the gas is passed into the annular space A, where it is further subjected to the action of heat, and escapes at c. By these means portions of the material from which the gas is made, which passes off in the shape of tar, etc., are further acted upon by the heat and converted into gas.

The inventor says: I do not claim the D gas retort, nor the passing of gas through a second retort or heater, nor a retort with a cellular shell or exterior wall; but what I do *claim* is the D gas retort with the annular space above, as above described, cast with and making a part of it, as illustrated by the accompanying drawing.

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No. 13,754.—STEPHEN HILL and WILLIAM J. WOOD.—*Improvement in Gas-Holders*.—Patented November 6, 1855. (Plates, p. 98.)

*Claim*.—The combination of the pipes T T<sup>1</sup> with the diaphragm d within the gas-holder, for the purpose of applying an equable pressure to fill the gas-holder with gas, and to expel the gas therefrom.

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No. 12,304.—WILLIAM ADAMSON.—*Improvement in Clarifying Glue*.—Patented January 30, 1855.

Powdered sulphate of lime or terra alba is mixed with water, so as to make a thick solution, which is to be poured into the vat containing the liquid glue, and stirred from three to five minutes. The whole is then suffered to stand for fifteen minutes, during which time (as the inventor states) all the impurities are precipitated to the bottom of the vat, and the clear liquid is drawn off above.

*Claim*.—The employment of the material specified, for the purpose of clarifying glue, gelatin, size, &c.

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No. 12,204.—ADOLPH HAMMER.—*Improvement in Hop-Extracting Apparatus*.—Patented January 9, 1855. (Plates, p. 98.)

The nature of this improvement consists in providing a suitable metallic vessel (constructed as shown in the engraving) adapted for holding the quantity of hops required for a brewing of malt liquor, and retaining therein, whilst partially immersed in the boiling fluid used for the purpose during the process of extraction, the essential oil or volatile principle of the hops, without the possibility of any considerable loss thereof from evaporation or waste.

The retaining vessel A being filled with the proper quantity of hops, and being placed within the boiling vessel (as shown in the engraving.)



and the hole *i* being closed, the extracting fluid is run into it until it reaches within about four inches of diaphragm *d* of the upper part or cover of the retaining vessel, there being a small vent-cock previously fixed in said part of the vessel to let the atmospheric air escape as the fluid rises above the lower end of tube *e*. The cock is closed when the fluid reaches the designated height in vessel A, thus leaving therein an empty space, of about four inches height, between the surface of the fluid and the diaphragm *d*; and the surface of this fluid being considerably above the lower edge of the upper part or cover of vessel A, and consequently also above the lower end of tube *e*, this space is sealed from the open air outside.

*Claim.*—The retaining vessel A, constructed and arranged substantially as described, for the purpose of producing the extract from hops required in brewing malt liquors, using the boiling vessel B, or any equivalent device, for the purpose of boiling the hops within the said retaining vessel, substantially as described.

No. 12,144.—H. G. TYER and JOHN HELM.—*Improvement in Processes for making India-rubber Cloth.*—Patented January 2, 1855.

This improvement consists in subjecting the cloth, which has been previously coated with a layer of India-rubber cement, suddenly to a degree of heat from 140° to 180° Fahrenheit. By this sudden application of heat while the goods are still in a green, undried state, the camphene used in the cement evaporates very rapidly, and leaves the gum punctured with minute orifices, which are too small to allow the passage of globules of water through them, but are large enough for the passage of air through them.

(No illustration.)

*Claim.*—The peculiar mode, so described, of preparing the uppers of boots and shoes.

No. 12,334.—HENRY G. TYER and JOHN HELM.—*Improvement in Processes for making India-rubber Cloth.*—Patented January 30, 1855. (Plates, p. 98.)

The India-rubber compound (in a plastic state) is introduced at C, between cylinders 1 and 2; it passes between the said cylinders, and, adhering to cylinder 2, is carried round and down until it comes nearly in contact with cylinder 3, when the end of the roll of cloth A is inserted between cylinders 2 and 3, and the compound is pressed upon and into the cloth by the action of the cylinders. When the cloth and compound thus united on one side have passed round cylinder 3 until they have come nearly in contact with cylinder 4, the end of the cloth from roller B is inserted between cylinders 3 and 4, so as to come in contact with the compound on cloth A. The two pieces of cloth, with the compound between them, then pass between cylinders 3 and 4, when the two pieces of cloth become firmly united with the compound.

*Claim.*—The process described of making elastic fabrics without a

previous preparation of threads, strips, or sheets, or the coating of the cloth by cement.

No. 12,738.—WILLIAM F. CONVERSE.—*Improvement in India-rubber Springs*.—Patented April 17, 1855. (Plates, p. 98.)

The block of India-rubber *a* is prevented from yielding sideways by plates *d*, bolts *c*, and nuts *p*. A yielding strap, formed of hooked and properly bent plates *f* and links *g*, is tightened or loosened by compressing or opening the outer ends of levers *i i'*, as apparent from the figure. Thereby more or less of the resilient force of the block will be brought into operation. The resilient force the block is able to exert can be adjusted by setting the laterally confining plates *d* and nuts *p* nearer together or wider apart. When once adjusted, they are to remain stationary, and prevent all longitudinal expansion of the block. The compressing forces, when acting upon the outer ends of the levers *i i'*, press all parts of the block towards its central line; and the nearer the levers approach each other, the more the resistance of the block will be augmented in every direction, the block at the same time always preserving the cylindrical form. In order to enable the initiatory action to be made as prompt as may be desired, the concave inner surfaces of the plates *f* are grooved (see *n*, fig. 3), so that the opposing resilience of the block does not re-act against the entire surface of the strap until all the grooves are filled in.

For carriages, for instance, one lever *i* would be attached to the holster, the other lever resting upon the axle-bed.

The inventor says: I am aware that springs of India-rubber, and other similar materials, have been completely confined in cylindrical and other unyielding cases; such an arrangement, therefore, I do not claim. But I do *claim* the method of confining a cylindrical or prismatic block of India-rubber at all points of its surface, by means of a jointed or otherwise flexible cylindrical strap, connected to double levers or their equivalents, for applying the compressing strain convergently or radially upon the enclosed rubber. I likewise claim, in this connection, adjustable end-plates for securing the rubber from lateral expansion, and for graduating the elastic force of the spring, if desired, by means of screw-nuts or equivalent devices, substantially as herein described.

No. 12,983.—SIGISMUND BEER, assignor to LEWIS FEUCHTWANGER and SIGISMUND BEER.—*Improvement in De-vulcanizing India-rubber*.—Patented May 29, 1855.

The claim sufficiently indicates the nature of this improvement.

The inventor says: I do not limit myself precisely to the ingredients or process named, as the same is undoubtedly susceptible of considerable variation, without in the least changing the character of the invention, or the results produced thereby.

I *claim*, therefore, the restoration of caoutchouc, gutta-percha, or other similar gums, which have undergone the process of being cured

or vulcanized, so that those gums may be capable of being used again as a substitute for native gums of like character, or in combination with such gums, by first treating the vulcanized gum with alkalies, or compounds of alkalies and oils, as potash with any common grease or oil, for extracting the sulphur, &c., and then submitting the mass to the action of heat and turpentine, or any other liquid known to be a solvent of the gum in its natural condition, as described.

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No. 12,616.—RICHARD BAKER.—*Improvement in the Manufacture of White Lead by Precipitation*.—Patented April 3, 1855. (Plates, p. 98.)

The inventor says: I *claim* an improvement in the combination of apparatus, so arranged and constructed as to produce carbonate of lead by precipitation more expeditiously and economically than by any other arrangement heretofore, and for the same purpose.

I do not claim each and every part of the apparatus described as new.

I *claim*, connecting with an air-pump a series of vertical distribution pipes *o o o*, as described, consisting of a great many in number, descending vertically from the main horizontal pipe *O*, and passing down through the head of the precipitating vessel *D* into the solution of subacetate of lead pipe *i*, at least through each square foot of surface of the top of the precipitating vessel, thereby traversing the solution with a great number of small jets or blasts of carbonic acid gas, causing a very rapid decomposition of the solution; as the vertical pipes cannot choke up with the ponderous precipitate, a constant blast from each pipe is thereby insured.

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No. 13,632.—PHILIPPE L. BERNARD and JOSEPH ALBRECHT.—*Improvement in the Manufacture of Acid Sulphate of Lime*.—Patented October 9, 1855. (Plates, p. 98.)

The oven for generating sulphurous acid consists of the generator *g*, which is a cast-iron tray for receiving and evaporating the sulphur; it is heated from the fire-hearth *r* below. The apertures *x x* underneath the projecting cornices *u* are provided with doors to regulate the admission of atmospheric air to the vapors of the sulphur. Pipe *Z* at the top of the oven leads to the lead chamber, which contains sheet-lead and receives the sulphurous acid gas from the oven and deposits the sulphur, if some should have escaped unburnt. The absorbing apparatus consists of cylinders 1, 2, and 3, coated inside with lead. The cylinders are surrounded with troughs *k* containing cold water, and are connected by large pipes *f, a, c, e*, through which, and through the cylinders, the gases are carried up to the ventilator *V*; and by smaller pipes *s, n, m*, which lead the liquid part downwards from cylinder 3 to 2, and to 1, and from the latter to any convenient vessel wherein it can settle. By means of this arrangement of the cylinders, one above the other, the dissolved alkalies are made to take the opposite course of the sulphurous acid gas, tending to effect a perfect saturation of the alkalies with the acid.

*Claim.*—The apparatus for the manufacture of sulphate and bisulphate (or acid) of lime, consisting of the oven *g*, *r*, *u*, *x*, the three superposed cylinders Nos. 1, 2, and 3, and the ventilator *V*, each of said parts constructed, furnished, and arranged substantially as described, and for the purposes specified.

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No. 12,259.—JOHN SUTTON.—*Lubricator for Steam-Engines.*—Patented January 16, 1855. (Plates, p. 99.)

The inventor says: I do not claim the employment of a cylinder and a solid piston, combined with a grease reservoir, to force grease into steam cylinders and other parts of engines and other apparatus while in operation, as I am aware that such a combination has been before made use of, but with cocks or valves not only in the discharge passage, but in the passage communicating between the reservoir and cylinder.

But I *claim* arranging the passage or passages between the grease reservoir and forcing cylinder, substantially as described, so as to be opened and closed by the movement of a solid piston; thereby dispensing with a valve or equivalent, either in the piston or in the said passages, and only requiring one valve or cock in the discharge passage. (See engraving.)

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No. 12,716.—NATHAN DRESSER.—*Improvement in Lubricating Compounds.*—Patented April 17, 1855.

This compound is intended to produce a great saving of oil, grease, &c., in lubricating journals, &c. The compound is made by melting say one pound of tallow, and, while hot, adding half a pound of sperm or other oil, then adding two pounds of pure pulverized lead, with which there is used in warm weather more tallow, and in cold weather more oil, to give sufficient consistence for holding the lead in suspension when applied to the journal.

*Claim.*—The lubricating compound, and its application to journals, cranks, axles, and other machinery subject to friction, using for that purpose the aforesaid compound, or any other substantially the same and which will produce the intended effect.

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No. 12,918.—JACOB MARSHALL.—*Improvement in Lubricating Compounds.*—Patented May 22, 1855.

The claim sufficiently explains the nature of this improvement.

The inventor says: I do not claim the use of soap, nor the mixture of soap and oils, for lubrication;

But I do *claim* the combination of whale or other oils mixed with the oleate of zinc, prepared by mixing a solution of soap in water with a solution of acetate of zinc in water, in which the oleate of zinc is separated in a saponaceous mass, while the acetate of soda dissolves in the liquid, in the manner herein set forth.

No. 12,964.—E. FREEMAN PRENTISS.—*Improvement in Lubricating Compounds*.—Patented May 29, 1855.

Oil-soap is dissolved in hot water, and then olive, lard, rape-seed, or any other kind of oil which can be used on wool in the process of its manufacture, is mixed with the solution, taking equal quantities of both. This mixture can then be used just like pure oil.

The inventor says: The said wool-oil will not decompose, because the oil of soap neutralizes the stearine matter in the oil; hence there is nothing to decompose, and spontaneous combustion cannot be produced for the same reason.

*Claim*.—The manufacture or preparation of a compound, which I denominate wool-oil, of the ingredients, in the manner, and for the purposes set forth.

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No. 13,211.—ELEAZUR BROWN, Jr.—*Improvement in Lubricating Compounds*.—Patented July 10, 1855.

The nature of this improvement is set forth in the claim.

*Claim*.—The use and application of saltpetre combined with common hard soap and fat salt pork, or any similar oleaginous animal substance, thereby forming an anti-frictional, refrigerating, lubricating compound, adapted to the purpose of lubricating the journals of railroad cars, locomotive-engines, and also the journals of all kinds of machinery, as described.

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No. 12,205.—ADOLPH HAMMER.—*Improvement in Mash-Machines*.—Patented January 9, 1855. (Plates, p. 99.)

The hollow shaft G, which supports the upper rake H, is supported by a ring g on shaft B, and turns around the latter shaft, which carries the lower rake C, both the rakes turning in opposite directions. Thus the inventor proposes to effect a more rapid and perfect mixture of the ground malt and water.

The inventor says: I do not claim the lower rake, nor the central shaft and gearing, nor the diaphragm, either singly or in combination with a mash-tun; as these, or their equivalent devices, have been used before for distilling purposes;

But I do *claim* the application and use of the upper rake, constructed substantially as described, when combined with a mash-tun, so as to be rotated in an opposite direction to that of the usual rake thereof, and with a more rapid speed, substantially and for the purpose as described.

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No. 12,614.—HENRY W. ADAMS.—*Improvement in Factitious Oils*.—Patented April 3, 1855.

The nature of this process consists in mixing crude turpentine with the fixed oils, and filtering the said mixtures, after neutralizing any acid which may be in the turpentine, by an alkali.

Thus, the inventor states, a cheap, clear, and transparent oil is produced, either for lubricating or burning.

The inventor says: I am aware that animal and vegetable oils have been mixed together and used for lubricating, painting, tanning, and burning purposes; I therefore claim no such mixtures. But crude turpentine is not an oil, and therefore its mixture with fixed oils is a new composition of matter.

But I *claim* the use of crude turpentine in a mixture made with it and the fixed oils, in the manner and for the purposes substantially set forth.

No. 13,486.—THOS. BARROWS.—*Improvement in Preparations of Wood Oil*.—Patented August 28, 1855.

The inventor says: In basing my claim of invention or improvement on the use of mucilaginous matter, I do not include aluminous or gelatinous matter of animal origin, nor ammoniacal or other alkaline emulsions, which have been before used; but restrict myself to the use of those watery solutions of mucilage from plants and seeds, whose muculent character is distinguished from the gum or glue-like character of those substances heretofore used, by not drying out from the mixture with the oil, when on the fibres of the wool I use any of the oils adapted to oiling wool, in mixture with mucilage, although such mixture, by rest for a longer or shorter time, will become separated into oil which floats, and mucilage which subsides; but prefer the prepared oleic acid or olein mixture, as it often remains uniform several days. I, however, lay no claim to the application of oleic acid, as described.

But I *claim* for the treatment and imbuing of wool, during or previous to its manufacture into yarn or cloth, the application thereto of mucilage possessing an attraction for water, such being found in sea-mosses and allied vegetable productions, or in various seeds, such as flaxseed, it being used either alone or in mixture with an oil, or some other material.

No. 13,557.—WILLIAM WILBER.—*Improvement in Steam Apparatus for Extracting Vegetable Oils*—Patented September 11, 1855. (Plates, p. 99.)

The kettle K is surrounded with a steam-jacket C, into which steam can be admitted through pipe D. The steam can be admitted from the jacket into the kettle containing the seed by cock F.

I *claim* a kettle for steaming or boiling and moistening crushed oleaginous seeds, into which steam is admitted whilst it is surrounded by steam, so that the cooking and moistening be done by the direct and indirect action of steam, substantially as described.

No. 13,708.—OSCAR REICHENBACH.—*Improvement in Preparing Cotton Seed for Extracting Oil*.—Patented October 23, 1855.

The cotton-seed is poured into a vessel containing sulphuric acid. The acid soon destroys the cotton fibres. When sufficient seed has been thrown in to absorb all the acid, and before the acid begins to destroy the peel, water is to be poured over the mixture, and (by opening a cock at the bottom of the vessel) the water allowed to run off.

*Claim.*—The application of sulphuric acid, or acids in general, to free cotton-seed, as it comes from the cotton-gin, from all surrounding cotton-fibre, previous to the extraction of oil from the seed.

No. 12,361.—HENRY GLYNN.—*Improvement in the Manufacture of Paper Pulp*.—Patented February 6, 1855.

The inventor introduces into two hundred and fifty pounds of pulp nine pounds of hydrated soap, either potash or soda, previously dissolved in boiling water; and when the soap is thoroughly incorporated with the pulp, he adds a mineral or metallic salt in such quantities as to render the introduced soap insoluble.

*Claim.*—Introducing into the pulpy mass soluble soaps of wax or fats, made as set forth, and converting the same into insoluble soaps within the pulp by means of soluble salts, substantially as described, for the purpose of preventing forgery, mildew, and the action of insects, rats, and vermin.

No. 12,414.—CHARLES C. HALL.—*Improvement in the Preparation of Paper from Resinous Barks*.—Patented February 20, 1855.

The bark is placed in a boiler, and, being covered with water, is digested at a slow heat for the purpose of softening the scales. A moderate heat having been applied for two or three hours, the quantity of water is doubled, and a steam-heat is raised, in which the bark is digested for four or five hours, until its fibres are so far detached from each other, that, by the usual machinery, it is easily reduced to a pulpy condition. The bulk thus brought to a pulpy condition is then taken to the pulp-engine, and there operated upon for two hours, when the hard stock having previously been partially pulped, the two are mixed in the proportion of three parts of bark to one part of hard stock, and the whole is then pulped four additional hours.

*Claim.*—The process of preparing paper pulp, as described, using the entire substance of the bark of resinous wood, in which I retain the resinous and gummy matter within the substance of the barks, to act as a size or stiffening for the paper.

No. 13,325.—GEORGE THOMPSON.—*Improvement in Preparing Potash and Soda*.—Patented July 24, 1855. (Plates, p. 99.)

Fig. 1 represents the tray in which the melted soda or potash is cast. Fig. 2 represents the sector, which is to be placed inside said tray (see

fig. 3), for the purpose of dividing the melted soda into cakes of equal size and weight.

*Claim.*—The use of a tray and sector, constructed as described, for the purpose of dividing caustic soda or potash into parcels of convenient size and shape, and of uniform weight.

No. 12,139.—OBADIAH RICH.—*Improvement in Processes for Extracting Tannin from Leather.*—Patented January 2, 1855.

The leather, having been chopped into small pieces, is washed, to remove the dirt and part of the coloring matters; then digested in a caustic alkali of ammonia, potash, or soda, until the whole of the tannin has been extracted; it is then pressed or placed in the centrifugal machine, in order to expel as much of the liquor as possible. This liquor is now acidulated with sulphuric, muriatic, or acetic acid, in order to set free the tannic acid, and more readily combine it with gelatine. This liquor, now charged with the tannic acid, is to be used for tanning skins, &c. Before proceeding to the manufacture of glue, the skin is again subjected to the action of a new solution of caustic soda, to remove the tannin entirely. Now the scraps of skin are washed in pure water, to remove all traces of the soda; then they are digested in very dilute acid, to remove the coloring and earthy matters; then they are immersed in a weak solution of carbonate of soda, in order to neutralize any trace of acid that may remain, and when well washed, are ready to be converted into glue, in the usual manner, by boiling.

The residue, after the gelatine is extracted, may be used as a manure. (No illustration.)

*Claim.*—The process herein described for the removal of tannic acid from leather, and the subsequent preparation of the skin for making glue, or for use as a manure, substantially as herein set forth.

No. 12,142.—RICHARD A. TILGHMAN.—*Improvement in Processes for making Soap.*—Patented January 2, 1855. (Plates, p. 99.)

The invention consists in making soap from neutral fatty bodies and carbonated alkalis, by subjecting a mixture of the fat and solution of carbonated alkali to a high temperature and pressure, whereby the glycerine of the fat and the carbonic acid of the alkali are set free, and the fat, acid, and alkali combine into soap.

The figure shows an apparatus which may be used for the above process. The fat or oil is placed in vessel *a*, with from one-third to one-half of its bulk of warm water, in which is dissolved the proper quantity of carbonated alkali; the perforated piston *b* being kept in motion causes the fat and solution to form an intimate mixture. Pump *c* drives the mixture through coil of tubes *d*, which are heated from furnace *f*. From the end *g* of said coil the mixture, which has then become converted into soap, solution of glycerine, and free carbonic acid, passes through coil *h*, immersed in water to be cooled down.



after which it escapes through the properly loaded exit valve into the receiving vessel.

*Claim.*—The manufacturing of soap by subjecting a mixture of fatty matters and solution of carbonated alkalies to a high temperature and pressure, as described.

No. 12,585.—LEVI B. DARLING —*Improvement in Processes for Refining Jewellers' Scraps.*—Patented March 27, 1855.

This process consists in converting the impure or base metals which are combined with the precious metals—gold and silver—in the scraps, etc., into oxyds by the use of an oxidizing salt, in contact with the scraps at a comparatively low heat, then separating the oxyds of the base metals by sulphuric acid; after which they, the spongy noble metals, are washed and reduced to a metallic state by a proper flux and heat in any of the known ways.

*Claim.*—The processes described of separating and recovering the gold and silver from goldsmiths' and jewellers' scraps, such as turnings, sweepings, cuttings, and filings, which contain both noble and base metals; that is, by melting down the metallic compounds, then stirring in gradually the nitre, and working the mass without fluxing; then washing with water, and treating with sulphuric acid to convert the oxydized products into the sulphates, in the manner described.

No. 12,612.—ABRAHAM GESNER, assignor to the "NORTH AMERICAN KEROSENE GAS-LIGHT COMPANY."—*Improvement in Processes for making Kerosene.*—Patented March 27, 1855.

The raw material is submitted to dry distillation at the lowest temperature at which the kerosene will volatilize. The liquid products of this distillation are heavy tar and water, or ammoniacal liquor, which lie at the bottom of the receiver, and a lighter liquid which floats above them. The light liquid is then drawn off and re-distilled at the lowest possible heat, whereby again a heavy and a light volatile liquid are produced. This light liquid is removed and mixed with from five to ten per cent. of strong sulphuric, nitric, or muriatic acid; also, with from one to three per cent. of peroxyd of manganese. Then the mixture stands from twelve to twenty-four hours, to let the impurities subside. The light liquid is then taken off and mixed with about two per cent. (by weight) of powdered and freshly calcined lime, which will absorb the water. The mixture is now again distilled, raising the heat gradually to 160° Fahrenheit, until all the vapor has passed into the receiver that the liquid will yield at this temperature. This distillate is the "A Kerosene." By raising the heat now to 260°, "B Kerosene" is produced; and by finally raising the heat to 360°, "C Kerosene" will be produced, thereby completing the process.

*Claim.*—The process described for extracting the liquid by hydrocarbons which I have denominated kerosene, from asphaltum, bitumen, asphaltic and bituminous rocks and shales, petroleum and maltha, by

subjecting any of these substances to dry distillation, rectifying the distillate by treating it with acid and freshly calcined lime, and then submitting it to re-distillation, as set forth.

No. 12,777.—CHARLES CAMPBELL.—*Improvement in Processes for Purifying and Cleansing Wheat*.—Patented May 1, 1855.

The inventor says, in his specification: Take of lime newly slaked, and while yet warm, one and a half pounds to each one hundred pounds of wheat; mix the lime well with the wheat, let it stand one hour, then pass it through a smut-mill in the usual way, and all the lime, smut, and impurities of every kind attached to the wheat, will be entirely removed, and the flour be perfectly white and sweet. (No illustration.)

The inventor says: What I *claim* is not the smut-mill or improvement thereon, or any new chemical quality of lime; but it consists in the preparation of lime for this particular purpose, and the application of it to wheat when newly slaked and warm, so as to much more effectually cleanse the wheat from all impurities than by any other process.

No. 12,834.—JOSIAH J. SHERMAN.—*Improvement in Processes for Preparing Liquids for Aiding Digestion*.—Patented May 8, 1855.

The inventor mixes common malt-liquor beverages with a solution which is obtained in the following manner: Emptying the fourth stomach of a recently-slaughtered ox of its contents, and sponging away (without disturbing the gastric juice in it) the mucus from its lining membrane. This membrane is separated from the stomach and placed in one gallon of warm water, acidulated by hydrochloric or muriatic acid to a degree rendering it only just perceptibly acid to the taste. The water is allowed to steep about six hours, being kept at at about 90° Fahr. The solution is then strained through a fine sieve and filtered.

This solution, though very inactive as a digestive at low temperatures, has, at the temperature of the human stomach, a similar digestive power over alimentary matter with that possessed by the living stomach. (No illustration.)

The inventor says: I do not claim as my invention or discovery the solution used, that being substantially described by Liebig, nor any part of the manufacture of malt liquors;

But I do *claim* the new composition produced substantially as set forth in the foregoing specification.

No. 12,948.—HOMER HOLLAND.—*Improvement in Processes for Treating Auriferous and Argentiferous Sulphurets*.—Patented May 29, 1855.

The nitrate of soda when ignited burns slowly and mildly, and more especially so with the metalliferous sulphurets, while there is also neither violent action to explode and scatter the mixture nor heat gen-

erated sufficiently intense to volatilize the metal. For these reasons the inventor employs the said material in his process.

The inventor says: I do not confine myself to the precise details or arrangements which I have had occasion to describe or refer to; as many variations may be made therefrom, without deviating from the principles or main features of my invention.

But I *claim* the substitution of nitrate of soda as an improved agent over common nitre for oxydizing the sulphur of ores, for reasons given in the specification setting forth the difference.

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No. 13,206.—THOS. BARROWS.—*Improvement in Processes for Treating Wool*.—Patented July 10, 1855.

*Claim*.—The application of nitre or any of its equivalent salts, as set forth, to wool in a warm bath, for the purpose of restoring the wool when it has become changed, as well as for cleansing, softening, and preparing it so as to better adapt it to receive dyes, and be finished in fabrics.

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No. 13,316.—SAMUEL MACFERRAN.—*Improvement in Processes for Smelting Iron*.—Patented July 24, 1855.

The fuel employed is crystallized carbon, which is the scale adhering to the inside of the retorts of gas-works. The inventor states that if used together with the iron in the cupola, (without coal or any other fuel,) it melts the iron rapidly, and furnishes a pure and hard iron. The fire is started with a bed of coal as usual, and then charged with the carbon and iron, without using coal.

*Claim*.—The use of gas-carbon as a fuel in the process of smelting iron, as set forth.

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No. 13,317.—DANIEL W. MESSER.—*Improvement in Processes for Hulling Cotton-Seed*.—Patented July 24, 1855.

The shell of the cotton-seed is first softened by soaking it in boiling water, or in cold water and subjecting it to the action of steam. The seed is then passed through rollers, or otherwise subjected to pressure in small quantities at a time; by which means the shell is broken, and the kernel is forced out.

The inventor says: I do not claim submitting cotton-seed to pressure by passing it between rollers or otherwise, for the purpose of extracting the oil therefrom, neither do I claim subjecting the seed to the action of steam to facilitate the expression of the oil; nor do I claim any method of extracting or expressing oil from cotton or other seeds;

But I *claim* separating the kernel from its shell and fibre, previous to expressing the oil, by the method described, or by any other method substantially equivalent, the seed being macerated to soften the shell, and then submitted to pressure for the purpose of pressing out the kernel, in the manner and for the purpose substantially as set forth.

No. 13,987.—JOHN P. HALE.—*Improvement in Apparatus for making Salt*.—Patented December 25, 1855. (Plates, p. 99.)

The brine from the wells is poured into kettle A, and, by means of the fire in furnace B, is reduced to nearly the point of saturation. The brine is then drawn off by means of tube *b* into vat F until the impurities have settled. The pure brine is then pumped out into kettle C, which is heated by the steam from the lower kettle. As the water evaporates, the salt granulates in the kettle C.

By this arrangement, the kettles are prevented from being cracked, as the lower kettle is always supplied with brine, and the brine in the upper kettle cannot be heated higher than  $212^{\circ}$ ; consequently, the salt will not be burned, colored, or injured.

The inventor says: I do not claim the process of manufacture described, irrespective of the means employed for carrying out the process. I claim the two pans or kettles A C, placed one over the other, or a furnace B, in combination with the vat F, the parts being arranged as shown, for the purpose specified.

No. 12,819.—BENJAMIN HARDINGE.—*Improvement in Apparatus for Dissolving Silica*.—Patented May 8, 1855. (Plates, p. 99.)

The heated steam is applied to the under-strata of the silicates in boiler A, while the upper stratum is continually being relieved of steam by pipe 17 passing from the upper part of the boiler through a cold-water tank (fig. 2), thus relieving the upper strata of steam and hydrated silicious globules as soon as solution begins to take place, easing the pressure from the safety-valve, saving the waste hydrous silicates which pass through said pipe in the form of minute capsules, and applying the same to use in making plastic masses of coarser kinds. The horn-pipe E (secured to the rotary shaft-pipe 4) jets out the heated steam in a circuitous direction (among the lower heavy strata), thus disseminating the steam away from a particular point in the bottom of the boiler, and thereby preventing the destruction of the latter.

The inventor says: I do not claim, in the present application, to have discovered any new solvent principle for silex, either by the above named alkaline salts or steam under high pressure, as these facts have long since been known to chemists.

I do not claim the heating the steam in coiled pipe, and thereby forcing it to the bottom of the boiler A.

I do not claim any originality of structure of the furnace, or the manner of setting the boiler with its man-hole or gauge-cocks.

I do not claim, as original with myself, the structure of the cold-water tank itself;

But I do *claim* filling the pipe C with the water from the upper stratum in boiler A, so constructed as to find its common level in pipe C, in furnace D, from whence the heated steam is forced over and down into the under stratum of the heavy silicates by the horn-pipe E, while the steam-pressure is relieved from the surface by my relief-pipe 17, which coils through the tank (fig. 2) of cold water, for the purposes described and set forth.

No. 12,840.—JOEL WEBSTER.—*Improvement in Silvering Looking-glasses*.—Patented May 8, 1855. (Plates, p. 99.)

The air-tight spaces  $a$   $a$ , in the tables  $A$   $A$ , communicating by means of an elastic tube  $d$ , are properly filled with air through a nozzle in one of the tables. The tables being open (fig. 2), one of them is covered with the silvering preparation; the sheet of glass  $f$  is then laid upon it, and the other table thrown over upon the glass (fig. 3). The necessary pressure is then given by weights placed upon the back of the upper table.

The elasticity of the tables will prevent the breaking of the plates, however great the pressure.

*Claim*.—1st. The two tables  $A$   $A$ , having elastic faces, and being employed in combination with each other, substantially as and for the purpose described.

2d. When the requisite elasticity is given to the faces of the tables  $A$   $A$ , by the employment of an air-packing, I claim connecting the air-cavities  $a$   $a$ , by means of a flexible tube  $d$ , as described, by which means both cavities are caused to be filled with air at once, and to contain a uniform pressure.

No. 13,367.—ANTON VAN HAAGEN.—*Improvement in Soap-Cutting Machines*.—Patented July 31, 1855. (Plates, p. 99.)

A slab of soap being laid on the rollers  $j$ , in front of the driver  $b$   $c$ , and with one edge bearing close against rollers  $l$ , the slabs are advanced by the driver and are run between the wires  $f$ , and thence on to the rollers  $k$ , immediately in front of the driver  $b$   $c$ , which driver, being in its turn advanced, pushes the bars through the wires, whence they emerge in the form of cakes.

*Claim*.—The ranges  $f$   $f$  of vertical wires, at right-angles to each other, in combination with the drivers  $b$   $b$ , moving at right-angles to each other, and the ranges of rollers  $k$   $l$  and  $j$ , for the purpose of cutting blocks of soap directly into slabs and bars at one operation, and without handling thereof when once on the machine.

No. 13,368.—ANTON VAN HAAGEN.—*Improvement in Soap-Cutting Machines*.—Patented July 31, 1855. (Plates, p. 100.)

The block of soap is placed on carriage or table  $c$ , which slides on ways  $b$ . The carriage is scored at top by grooves  $l$  in a transverse direction, the bottoms of the grooves following a cylindrical form that is sinking lower towards the side edges of the table, to allow the looped wire to pass entirely through the block of soap, and sink a short distance below the top surface of the table. The driver  $d$  forces the soap through the wires, and is scored across its face, similar to the carriage, and with the same object. The vertical range of horizontal wires  $k$  is arranged between post  $l$  and  $p$ , and the wires are held to a slight degree of tension by elliptical spring  $n$ . The horizontal wires  $k'$  are arranged between a horizontal frame  $m'$ , which, by means of a

gate *p*, receives a vertical motion up and down. The wires *k*<sup>1</sup> are also stretched by a spring *n*<sup>1</sup>. The soap, being driven forward, is divided into slabs by the wires *k*, and then, without being shifted, the entire tier of slabs is cut up into bars by the descent of the gate and wires *k*<sup>1</sup>.

*Claim*.—1st. The arrangement and combination, substantially as described, of a series of wires for cutting soap, said wires being stretched by means of springs for the easy formation of a loop at the commencement of cutting, and gradual increase of tension until the wire has entered the block.

2d. The combination, substantially as described, of grooved carriage, grooved driver, stationary and vertical range of horizontal wires, and descending horizontal range of horizontal wires, for the purpose of slabbing and barring a block of soap, without handling the latter after it is once placed upon the machine.

3d. The bed or carriage, and driver, scored transversely by grooves adapted to the loop of the wires, for the purposes explained.

No. 12,485.—MARCUS F. HYDE.—*Improvement in Soda-Water Apparatus*.—Patented March 6, 1855. (Plates, p. 100.)

The gas passing down through pipe *E* to the bottom of the condenser *C*, and coming in contact with the finely perforated disk *F* (made of wire gauze or other porous substance, is minutely subdivided, and in that condition passes up the water, until it is thoroughly carbonated.

*Claim*.—The porous distribution, or its equivalent, arranged and operating as described.

No. 12,489.—NEWTON D. ROBINS.—*Improvement in the Combination of an Air-Chamber, Water-Cooler, and Force-Pump, in Soda Fountains*.—Patented March 6, 1855.—(Plates, p. 100.)

A<sup>1</sup> A<sup>1</sup> is filled with ice-water and carbonate of soda, and the desired quantity of it is forced in the air-chamber, from which it may be served by faucet *k* into tumblers.

The inventor says: I do not claim the water-cooler, the air-chamber, the force-pump, the connecting-pipes, nor the making of soda-water with chemicals under atmospheric pressure;

But I *claim* the apparatus, as constructed, of a combination of a water-cooler A A, an air-chamber C C placed within A<sup>1</sup> A<sup>1</sup>, and force-pump B B, and made to operate substantially as specified.

No. 13,057.—WILLIAM GEE.—*Improvement in Soda-Water Generators*.—Patented June 12, 1855. (Plates, p. 100.)

The object of connecting the heads *b c* by a single bolt *d*, which at the same time serves as a shaft for the agitator, is to enable a person

to take the apparatus apart, clean it, and set it to work again in a few minutes.

*Claim.*—The described construction of a soda-water generator—that is to say, having the heads connected to the cylinder by a single bolt, which shall also serve as a shaft for the agitator to revolve upon, in the manner and for the purposes as set forth.

No. 12,846.—HENDRICK V. DURYEA, assignor to the "OSWEGO RIVER STARCH COMPANY."—*Improvement in Apparatus for Manufacturing Starch.*—Patented May 8, 1855. (Plates, p. 100.)

The starch-rake 2 is placed within a circular tube 1, which receives the starch in solution. The rake is movable up and down on the upright shaft, and when in motion revolves, cutting or digging the starch to fragments, causing it readily in this state, by application of water, to be redissolved, so that, by a pump or otherwise, it can be transferred to other depositories.

*Claim.*—The construction and adaptation of the rake 2, furnished with teeth 7, and hung on chains 6, for digging, cutting up, and loosening starch deposits.

No. 13,340.—HENRY COLGATE.—*Improvement in Starch-making.*—Patented July 24, 1855.

One hundred pounds of refined sugar are to be dissolved in sixty gallons of clear cold water, and to be mixed with the starch, just after the starch is separated from the gluten in the cisterns; stirring the solution well together preparatory to boxing, putting the compound into boxes, and the boxes into the stoves, and drying, as in the usual manner. This starch, the inventor states, imparts to the linen a superior strength and appearance, and answers better for culinary purposes than common starch.

*Claim.*—The process of manufacturing starch, by adding to it, in the process of making, a certain amount of sugar, in the manner and for the purpose set forth.

No. 12,852.—FRANCIS BOWMAN.—*Improvement in Rosin Stills.*—Patented May 15, 1855. (Plates, p. 100.)

The arrangement of tube B at a proper distance from the inside of section G, is to insure the arrest of the vapor in its suspended state. F in connexion with B both being covered with glass, prevents the pitch, which crawls up on the sides of the still by the action of heat, from being carried over and mixing with the vapor in the condenser. The bowl C prevents the pitch which is forced up from falling from the top and mixing with the vapor as it passes over into tube F, thereby rendering it impure.

*Claim.*—1st. The arrangement of section G of the still A, by inserting the metallic tube B, and section of a tube F covered with glass inside and outside, or a similar tube not covered with glass, projecting at any distance from the inside towards the centre of section G.

2d. The suspension of the inverted bowl C, covered with glass inside and outside.

3d. The formation of an arch under the still A, designated in the drawing by letter J, constructed of fire-brick, soapstone, or any other substance, to prevent the fire from touching the bottom of the still.

No. 12,719.—CONRAD WILLIAM FINZEL.—*Improvement in Processes for Melting Sugar*.—Patented April 17, 1855. Patented in England May 7, 1853. (Plates, p. 100.)

By melting sugars *in vacuo*, the inventor states, the melting takes place at a much lower temperature than by any of the processes now followed; the sugar is not liable to damage from heat, as it is not long in contact therewith; and a great saving of fuel and time is effected.

The figure represents an apparatus adapted to the purposes of this invention, which, however, may be modified in various ways. A is the vacuum pan, B the coil for heating the pan, C the test apparatus, D the man-hole.

*Claim*.—The herein-described improvement in refining sugars; that is to say, melting the raw sugar in a vacuum preparatory to the further refining thereof, in the manner and for the purposes as set forth.

No. 13,203.—JOHN ASPINALL.—*Improvement in Apparatus for Draining Sugar*.—Patented July 10, 1855. (Plates, p. 100.)

The sugar is deposited from hopper E on to the endless band C. As the band with its supply of sugar passes over the grating covering the chamber A, (from which the air is exhausted,) the fluids will be separated from the solid parts by the pressure of the atmosphere, and will be driven into the chamber, while the solid parts will be carried onwards by the band.

*Claim*.—The combination of the porous carrier, conveying a thin layer of the sugar to be drained, with the exhausted chamber, having apertures covered by the carrier, whereby the said sugar is exposed to atmospheric pressure while passing said apertures, in the manner and for the purposes set forth.

No. 13,740.—CHARLES E. BERTRAND.—*Improvement in Sugar Filters*.—Patented October 30, 1855. (Plates, p. 100.)

Pipe C serves for the introduction of the solution of sugar into the filters A A<sup>1</sup> A<sup>2</sup>, pipe F F<sup>1</sup> serves for the admission of steam, and L L<sup>1</sup> is the water-pipe. The filter A, being charged with charcoal, is then heated by opening steam-cock F. By opening the supply-cocks D and I of the pipe B, and the air-cock U, the boiling solution of sugar is introduced through pipe C into filter A. The connection of filter A with filter A<sup>1</sup> is now established by the connecting-pipe and stop-cock E and glass tube T; consequently, by opening cocks K, I<sup>1</sup>, and U<sup>1</sup> upon filter A<sup>1</sup>, the liquid from A will assume its level in A<sup>1</sup>, after having



passed through the filter A. When sufficiently filled, the cock E<sup>1</sup> in the vertical connecting-pipe of filter A<sup>1</sup> is opened; and the filtration, after having passed the second filter and the sponge-filter S, will find an outlet at G<sup>1</sup> into channel H<sup>1</sup> and reservoirs of vacuum apparatus.

The two filters A and A<sup>1</sup>, thus started, usually work but a certain length of time without interruption, as the sediments and fibrous matters contained in the solution of the raw sugar will soon accumulate and firmly settle upon the upper strainer in filter A. It then becomes necessary to remove such impediments, and this is effected simply by shutting off the supply at D, and by admitting steam through the cock F upon the surface of the solution in filter A, sufficiently long to force it about twelve inches below the strainer R, when the condensed water will free itself and float a few inches above the liquid. This being done, a reaction from filter A<sup>1</sup> is produced upon filter A—that is to say, from the bottom to its top—by opening the steam-cock F<sup>1</sup> and the cock K upon filter A<sup>1</sup>; also the connecting-cock E, with the air-cock V, upon filter A, the supply-cocks D<sup>1</sup>, L<sup>1</sup>, I<sup>1</sup>, and G G<sup>1</sup>, having been shut again. The pressure of steam through pipe E will now force the solution upwards in A, and all the sediments floating on its upper surface are removed by flowing off freely through the open cock U. Upon the reappearance of a clear and bright color of the solution, the backward action of the filter A<sup>1</sup> is discontinued by the closing of F<sup>1</sup> and V, and the forward and direct acting filtration again takes place by the reopening of the cock I<sup>1</sup>. If the power and the properties of the charcoal are completely exhausted, and the color of the liquid in the glass tubes T and T<sup>1</sup>, etc., indicates its perfect saturation, the supply-cock D is again closed, the cock L from the water-pipe opened, and the residue of the solution, by the aid of water and steam from the cock F, is fully unsweetened and washed out; finally it is carried off through M and pipe N for further preparations. Filter A is then emptied at Q, and recharged with a fresh supply of charcoal through the man-hole P, whilst, by bringing the filter A<sup>2</sup> in a similar relation to A<sup>1</sup>, the same communications as already described are now established between A<sup>1</sup> and A<sup>2</sup>, and the process of filtration is thus carried on without interruption. Again, when A<sup>1</sup> is to be renewed, the cock K<sup>2</sup> upon A, and the connecting-pipes E<sup>2</sup>, combine the filter A<sup>2</sup> with A; and the work is performed between the first and the third filter in a forward or backward direction, with an upward and downward pressure, and in precisely the same manner as already described and set forth.

*Claim.*—The combination of a series or system of three or more filters with the described and specified arrangement of steam, water, and saccharine juice pipes and their appurtenances, admitting of a continuous circulating motion of the liquid to be filtered from one filter into any of the others, until a clear and fair filtration is obtained; and also admitting of the working of the filters backward and forward at pleasure, either from the top to the bottom, or in the opposite direction, for the purpose of partially reviving the purifying properties of the charcoal until fully exhausted, as set forth.

No. 12,369.—L. WOODBURY FISKE.—*Improvement in Working Liming Vats in Tanneries.*—Patented February 6, 1855. (Plates, p. 101.)

The object of this improvement is to render the process of tanning more rapid, to cause the hides to come from the vats more free from lime in the pores than hitherto, at the same time, by preventing the forming of the pellicle on the surface of the liquid in the vats, the deposit of carbonate of lime, and consequent loss of strength.

Four staples F are fastened on the tops of the vats; and bars D and wedges E, which are passed under and through said staples, and over the vat-cover B, serve to press the cover tightly down on the top of the vat.

I claim using a close covering for liming and unhairing-vats, in the manner and for the purposes set forth.

No. 13,010.—SAMUEL T. McDougall.—*Improvement in Hydro-Carbon Vapor Apparatus.*—Patented June 5, 1855. (Plates, p. 101.)

The nature of this improvement consists in constructing the gas-generator A with an air-chamber around it, said chamber connecting at the top with a pipe surrounding the gas-pipes, and extending as far as the gas-pipes are exposed to the action of cold, so as to convey a current of hot air around the gas-pipes to prevent condensing.

*Claim.*—The double gas-pipe C for conveying hot air or steam around the pipes to prevent condensing, or any other substantially the same, and which will produce the intended effect.

No. 13,657.—ROBERT ROWLAND.—*Improvement in the Mutual Arrangement of Vinegar Rooms and White-Lead Corroding Chambers.*—Patented October 9, 1855.

*Claim.*—Arranging the room wherein the metallic lead is placed immediately above the room wherein the manufacturing of vinegar is going on, and perforating the floor between the two rooms, so that the acetic acid, which is generated in the manufacturing of vinegar, may pass from the lower room through said perforations into the upper rooms, and there, in combination with carbonic acid produced in the upper room by the fermentation of wort or other similar substances, (or introduced into the upper room by pipes,) act upon the metallic lead for the purpose of converting the metallic lead into the carbonate of lead.

No. 12,333.—JONATHAN G. TROTTER.—*Improvement in the Construction of Furnaces for Zinc-White.*—Patented January 30, 1855. (Plates, p. 101.)

*Claim.*—The manufacture of white oxide of zinc, whether from native ores or metals, the use of the atmospheric air supply-pipe L, flues M M, heating chambers H H and J, and series of apertures *h h* in the sides thereof, or substantially like parts, for the purpose of conveying into the

oven a great number of infinitely small jets or blasts of heated atmospheric air, (independent of the blast of atmospheric air supplied through the ash-pit of the furnace to support combustion,) for the purpose of more thoroughly consuming the gases from the ore and carbon.

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No. 12,418.—SAMUEL WETHERILL.—*Improvement in Apparatus for Separating Zinc-White.*—Patented February 20, 1855. (Plates, p. 191.)

The gases, as they escape with solid impurities from the furnace, are carried by a blowing or exhausting-apparatus *p* upwards, through a high chamber or series of high chambers *b c g*, the height of which is such, relatively to the force of the current, that the oxyd of zinc will be carried to the escape at the top, whilst the solid impurities, by reason of their greater specific gravity, will be left behind, and finally subside. The improvement also consists in partially cooling the white oxyd and gases during the process of separation, by causing currents of air to pass through hollow spaces *h l* in the surrounding walls. The white oxyd and gases are finally cooled by currents of air induced to enter through apertures *u* in the lower part of the cooling-chamber *s*, by forcing the gases into the said chamber obliquely upwards towards the roof *t* of the cooling-chamber, which induces a partial vacuum in the lower portion of the chamber, that atmospheric air may enter by atmospheric pressure.

*Claim.*—The combination of the chambers *e g* and *s*, or their equivalents, arranged and operating as set forth; also, the method of effecting the partial cooling of the white oxyd of zinc and gases, before they reach the final cooling-chamber, by currents of air passing through the hollow spaces in the surrounding walls, substantially as and for the purpose set forth.

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No. 12,613.—SMITH GARDNER, assignor to EDWARD KELLOGG.—*Improvement in the Manufacture of Zinc-White.*—Patented March 27, 1855. (Plates, p. 101.)

This operation is as follows: A coal-fire is made in the fire-chamber *f*, valve *v* in pipe *p* being closed, and the damper on top of the chimney *z* open; thus, the sulphurous and other impure gases evolved in the combustion of coal are driven off. When all these gases are expelled the said damper is closed, and valve *v* opened; the oven is charged with spelter, which is there vaporized without being oxydized, as the atmosphere is excluded therefrom; the vapor thus formed passes off through openings *e* into the oxydizing-chamber *x*, where it meets a current of heated atmospheric air, which, by means of a fan-blower, is driven in through pipe *h* and holes *i*, with which it intermingles, and at which point the vaporized zinc receives its proper charge of oxygen, and the oxyd thus formed passes through pipe *p*, and is drawn into the fan-blower and into a receiving-chamber of the usual construction.

*Claim.*—The construction of the fire-chamber, the vaporizing chamber or oven, and the oxydizing chamber, substantially as described.

No. 13,416.—JOHN E. BURROWS.—*Improvement in Making Zinc-White.*  
Patented August 14, 1855. (Plates, p. 101.)

The air is forced by means of a bellows into the air-chamber underneath the grate *F*, and hence passes up through the perforations of the grate. The perforated grate-bars serve to diffuse the air more evenly than could be done with solid grate bars. Thus the combustion of the fuel is more perfectly promoted, and the zinc liberated in the form of vapor, which, by contact with the atmospheric air, is condensed into white oxyd of zinc, and drawn off from the top of the furnace by an exhausting apparatus.

*Claim.*—The manufacture of white oxyd of zinc from ores of zinc or frankinite, prepared, substantially as set forth, by means of a furnace having perforated grate-bars, and an air-chamber underneath them, in which hot or cold blasts of air are forced to unite with the ignited mass of fuel in a diffused state, by passing through the perforations of the grate-bars to liberate the zinc in the form of vapor, in manner of construction and mode of operation substantially as set forth.

No. 13,431.—SAMUEL T. JONES.—*Improvement in Making Zinc-White.*  
Patented August 14, 1855. (Plates, p. 107.)

The nature of this invention will be understood from the claim and engraving, where *g g g* represent three of the grate-bars.

*Claim.*—The manufacture of white oxyd of zinc from ores of zinc or frankinite by means of a furnace having perforated grate-bars, and an air-chamber underneath them, in which hot or cold blasts of air are forced to unite with the ignited mass of fuel in a diffused state by passing through the perforations of the grate-bars, to liberate the zinc in the form of vapor, in manner of construction and mode of operation substantially as set forth.

No. 13,806.—SAMUEL WETHERILL.—*Improvement in Processes for Making Zinc-White.*—Patented November 13, 1855. (Plates, p. 101.)

The bars of the grate *b* are perforated with holes sufficiently small to prevent the crushed ore and coal from falling through, and still allow the air which comes from the blast-pipe *f* to pass through said holes and into furnace *a*.

A fire is first made in a thin layer well spread over the entire bed, and, when kindled, the charge of mixed ore and coal (two thousand pounds of pulverized ore, such as red oxyd of zinc, and about five hundred pounds of fine anthracite coal, known as pea-coal) is put on and spread evenly over the fire to the depth of about three inches. The passages *s*, through which the ore has been fed in, are then closed, and the chimney-hole *k* is opened. As soon as the gases appear of a pale-green color, which indicates that the charge is giving off vapors of zinc, the aperture *h* is closed, and the one leading to the collecting apparatus opened.

The inventor says: I do not claim the construction, or application of

the furnace so constructed to the working of the ores of zinc, for the production of the white oxyd of zinc, as it is my intention to make such claim in another application for letters patent. Nor do I limit my claim to the working of my improved process in a furnace of the special construction specified, having simply described the construction of the furnace as the one in which I have successfully worked my said process.

I *claim* the process of producing the white oxyd of zinc from the ore of that metal by the direct application of the fuel to the ore, in the crushed state and in admixture therewith, in combination with a blast of atmospheric air, introduced in numerous small jets to the charge of mixed ore and coal in a thin layer, substantially as specified.

## V.—CALORIFICS.

No. 12,409.—YARNALL BAILEY.—*Improvement in Fluid Burners.*—Patented February 20, 1855. (Plates, p. 102.)

The inventor says: I am aware that heaters have been applied to lamps, in contact with the flame, for similar purposes, heretofore; therefore, I do not claim the idea or invention of generating the vapor by use of heaters arranged in contact with the flame of lamps or gas-burners.

But I *claim* the construction and arrangement of the heaters D D, in combination with the generator B, for the purpose set forth substantially as described. (See engraving.)

No. 12,936.—ABRAHAM GESNER, assignor to "THE ASPHALTE MINING AND KEROSENE GAS COMPANY," assignors to said GESNER, and by said GESNER to the "NORTH AMERICAN KEROSENE GAS-LIGHT COMPANY."—*Improvement in Burning Fluids.*—Patented May 22, 1855.

The inventor says, in his specification: I take what (in a contemporaneous application for letters patent) I denominate the A Kerosene and B Kerosene and mix as much of either with the alcohol as the latter will dissolve. This mixture will burn in a proper lamp without smoke.

*Claim.*—As a new manufacture or composition of matter, the burning fluid, composed of alcohol and A Kerosene, as herein specified.

No. 12,987.—ABRAHAM GESNER, assignor to the "NORTH AMERICAN KEROSENE GAS LIGHT Co."—*Improvement in Burning-Fluid Compounds.*—Patented May 29, 1855.

The inventor mixes what (in letters patent previously granted) he denominates B Kerosene with as much alcohol as will suffice to dissolve the B Kerosene. Twenty-five parts of the B Kerosene re-

quires seventy-five parts of alcohol (of specific gravity 844, at a temperature of 60° Fahrenheit) to dissolve it.

*Claim.*—As a new manufacture or composition of matter, the burning fluid composed of alcohol and B Kerosene, as specified.

No. 13,450.—C. W. BLAKESLEE.—*Improvement in Candlesticks.*—Patented August 21, 1855. (Plates, p. 102.)

The inventor says: I do not claim forming the body and base of the candlestick of wire, neither do I claim a spring lamp or socket in itself considered, or independently of the mode of constructing or forming the same as shown; for they have been previously used.

I *claim* extending the wires of the body of the candlestick through a disk-shaped plate B, substantially as shown, for the purpose of forming a spring socket for the reception of the candle, as described.

No. 13,452.—WM. BURNET.—*Improvement in Sealing Cans.*—Patented August 21, 1855. (Plates, p. 102.)

*b* is a wire inserted transversely through and soldered to the cap, with its end protruding at *b'* to form lugs to catch under the flange *c* of the head, in which are made notches *d d* for the said lugs to pass through. When the cap is applied to the can A, there is left a channel *a*, which is then filled up with the sealing composition.

*Claim.*—The use of a clamp-cap B, constructed substantially as described, for the purpose of closing the opening in the can, between the filling and the final sealing thereof.

No. 13,660.—WM. MT. STORM.—*Improvement in Applying Fire-Extinguishing Cartridges.*—Patented October 9, 1855. (Plates, p. 102.)

*x* are the cartridges in the revolving-chamber E; K is the fire-slug in the bore C<sup>1</sup> of the gun; the base of the slug is protected by a thick pasteboard sole L<sup>1</sup>. The slug is composed of nitrate of soda three parts, sulphur two parts, charcoal one part. In the centre of the slug is left a tubular opening, into which is inserted a quick-fuse M, which will be ignited by the fire, and will in turn ignite the slug. These slugs can be thrown from the gun into or over the highest building.

The inventor says: I claim simply the plan of projecting into the flames, with precision and penetrating force, by means of an apparatus or gun purposely adapted, and by means of a projectile power, independently and separately generated the fire-extinguishing gas-generating solid itself, in the concentrated and properly-adapted form, substantially as described; and in moderate, distinct, and rapidly-intermittent masses, as explained: whereby the gas is generated apart from the machine and within the source of the fire. By all of which I attain the many points of increased efficiency and convenience of operation set forth.

No. 12,404.—GEO. B. CLARKE.—*Improvement in Chimney-Safes.*—  
Patented February 20, 1855. (Plates, p. 102.)

The receiver C serves to hold water which, from rain or condensed smoke, may run down inside the smoke-box B. The water may be drawn off at the faucet c. The box is set in the chimney so that its flanges *b* reach a little outside the brick, and little holes *a* are made through the mortar close to said flanges. Thus the water which runs down outside will also run into the receiver C. If, in case of fire, it is necessary to stop the draught of the chimney, the dampers E<sup>1</sup> are closed down, there being a door in the front part of the box B, which can be opened and shut. D are the stove-pipes.

The inventor says: I am aware that a narrow frame-piece, having a damper or valve, has before been fitted in the chimney above the point of entry of the smoke, to regulate the draught and aid in extinguishing fire in the chimney; such, therefore, I do not claim.

I am also aware that locomotive-engine chimneys have been provided with water-vessels or tanks to extinguish sparks carried up by the draught; this, therefore, also separately considered, I do not claim.

But I *claim* the smoke-box or chamber arranged in the chimney, as described, and having dampers E<sup>1</sup> above, and a conical or other equivalently-shaped receiver C below the point or points of entry of the smoke, as and for the purpose set forth.

No. 13,520.—MORTIMER M. CAMP.—*Improved Chimney Stack or Cap.*—  
Patented September 4, 1855. (Plates, p. 102.)

An enclosed space is formed between A and B, so that the cold air on the outside will not condense the smoke before it arrives at the orifice *a*. The inventor says in his specification: The interposition of the disc D will cause the wind, when deflected by the curved surfaces, to carry the smoke with it, upward or downward, causing a partial vacuum at the orifice *a*, and thereby increasing the draught of the chimney.

The inventor says: I do not claim either of the parts as such, nor any two of them combined; but I *claim* the combination of the three parts A C D, when constructed, arranged, and combined as described.

No. 13,620.—BENJAMIN FRANKLIN MILLER.—*Improved Chimney Stack.*—  
Patented October 2, 1855. (Plates, page 102.)

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I *claim* constructing and placing a solid or hollow cone, or a pyramid, in the mouth of a funnel or smoke-stack, with its apex upwards, or pointing outwards from the mouth of said chimney or pipe, in combination with the surrounding shield, furnished with flanches, as described, constructed and located substantially as set forth.

I do not claim as new, or as my invention, the conical shield, or the conical band and circular flanch described, they having been already applied or placed at the top of smoke-pipes, for the purpose of ventilation. I do not claim placing a single cone, with its apex pointing inwards, in the smoke-pipe or chimney, as new and first invented by me.

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No. 13,772.—JOHN W. DAVIES.—*Chimney Cap*.—Patented November 6, 1855. (Plates, page 102.)

The object of this construction is to prevent the smoke from being forced down the chimney by high winds.

The inventor says: I do not claim the cone, or the other parts, separately considered; but I *claim* the combination of the cap E and the cone D with the tube A, arranged substantially as described, and for the purposes specified.

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No. 12,486.—GEORGE MARTZ.—*Improved Coal-Screen*.—Patented March 6, 1855. (Plates, page 102.)

The conical screen *b* receives the coal to be screened at its rear end, and allows all but the coarsest portion thereof to pass through its meshes into the rearward discharging screen, while it conducts the said coarsest portion of the coal forwards, and discharges the same at its mouth.

*Claim*.—The improvement in coal screens by which the coarsest coal is separated from the finer sorts, and discharged at the mouth of the screen, whilst the finer sorts of coal are carried forwards, and separated the one from the other, in the usual manner.

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No. 13,083.—JAMES P. FENNELL.—*Improved Coal-Screen*.—Patented June 19, 1855. (Plates, p. 102.)

The nature of this improvement will be understood from the claim and engravings. G and H are the doors referred to in the claim. B is the revolving cylindrical coal-screen.

The inventor says: I am aware that a rotating screen in a tight box with a single drawer, which was used in common for the ashes and coal both, has been used. This I do not claim.

But I *claim* a portable coal-screen, composed of a tight box, within which are arranged a rotating screen and two drawers, the openings into which box are provided with doors, so that the box shall remain tight when either or both the drawers are taken out, as described.

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No. 13,699.—JOHN B. CREAMER.—*Improvement in Coal-Sifters*.  
Patented October 23, 1855. (Plates, p. 102.)

The wire-cloth in a prismatic form is fastened between two plates K and H, through which an axle A passes, provided with a crank.



The feet I serve the apparatus to stand upon when being filled with coal, for which purpose the plate K is provided with a lid, so that the apparatus can be opened when placed upright ready for filling. When filled, the lid is closed, and the apparatus placed within box S, the ends of the axle resting on bearings B B. It can then be revolved by means of the handle, so as to sift the ashes through.

*Claim.*—The dish H and feet I, in combination with the screen, operating as described, and for the purposes set forth.

No. 13,831.—GERARD SICKELS.—*Improvement in Coal-Sifters.*—Patented Nov. 20, 1855. (Plates, p. 102.)

The dust passes through grate B into space A<sup>1</sup>, whereas the sifted coals pass down into space A<sup>2</sup>.

*Claim.*—The peculiar manner of dividing the cylinder at A<sup>1</sup> A<sup>2</sup>, for the purpose of furnishing a receptacle for the separated coal, substantially as described.

No. 12,167.—RUSSELL S. MORSE.—*Improvement in Fruit-Dryers.*—Patented January 2, 1855. (Plates, p. 102.)

When the dryer is spread out (see fig. 1) in the open air for use, the fruit is placed upon the trays A; and in the evening, or previous to a shower, the dryer is folded up and protected by its roof B. (See figs. 2 and 3.)

*Claim.*—Constructing a portable fruit-dryer of a series of trays and a protecting roof, united to each other by hinging-bars, substantially as herein set forth.

No. 12,922.—THOMAS F. ROWLAND, JAMES STEPHENS, and WILLIAM H. MASON.—*Improved Apparatus for Drying Grain.*—Patented May 22, 1855. (Plates, p. 103.)

The nature of this improvement will be understood from the claims and engravings.

The inventors say: We do not confine ourselves to the use of steam for heating, as hot water may be made to circulate through the apparatus, instead of steam. Nor do we wish to be understood as confining ourselves to the special form or construction herein specified, so long as the same results are attained by equivalent means.

But we do *claim*: 1st. The heating-tubes, substantially as herein specified, in combination with the hopper, as specified, for partially heating the grain or other substance as it passes to the kiln. Also, in combination with the series of perforated or wire-gauze shaking-pans, the surrounding double metallic casing, the opposite sides of which are connected by horizontal tubes passing under the pans, and connected with a steam-boiler, for the circulation of hot water or steam through the whole casing and connecting-tubes, substantially as specified, the said double casing being surrounded by masonry as specified; the said combination being for the purpose of more effectually and

economically drying grain or other substances, without the danger of scorching or overheating it, and to avoid the condensation of the vapors evolved from the grain or other substance, which, if permitted to take place within the kiln, not only remoistens the grain, but is otherwise injurious. And also in combination with a kiln, consisting of the double casing connected with a steam-boiler, and surrounding the perforated or wire-gauze shaking-pans, substantially as specified, the employment of a blast of heated air introduced at the bottom, and forced to pass upwards through the kiln and through the perforations in the pans, and to escape at top, substantially as specified, for the purpose of driving off the moisture and vapors evolved from the grain or other substance, as specified.

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No. 13,832.—GEO. H. THOMAS.—*Improved Method of Inserting Tubes in Evaporating-Pans, &c.*—Patented November 20, 1855. (Plates, p. 103.)

The clamps *d* can be drawn together by means of the screw-rods *f* passing through the hubs of said clamps, so as to compress the elastic packing-rings *e* against the outer surface of the tube-sheets and the ends of the tubes. The clamps are perforated at *i i*, so as to afford space for the passage of gases or liquids.

These tubes can be readily taken out and re-inserted for cleaning or repairing, and firmly secured with tight joints.

*Claim.*—The method of securing tubes *a* to tube-sheets *b*, by making the tubes without projections on the surface, that they may be inserted directly through holes in the tube-sheets, substantially as described, in combination with clamps at the ends with interposed elastic packing, bearing against the ends of the tubes, and overlapping the joints, substantially as and for the purpose specified.

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No. 13,100.—DAVID POLLOCK and JAMES R. POLLOCK.—*Fan-Blower.*—Patented June 19, 1855. (Plates, p. 103.)

D are the wings of the fan, and B its perforated shaft.

The inventor says: Though we do not of itself claim the employment of a hollow shaft, we *claim* making the shaft hollow with open ends, and with apertures *g g* in the sides within the blower-casing, as set forth, for the purpose of inducing a current of air through the shaft to keep it cool, and, at the same time, to increase the supply to the fan.

2d. We claim making the pulley F, which receives the driving-belt, hollow, with closed ends and a perforated face, and providing openings from its interior into the shaft, as set forth, for the purpose of causing the displacement of the air between the belt and the face of the pulley, and, at the same time, increasing the supply to the fan.

No. 13,260.—JOS. C. GARTLEY and JACOB FOX.—*Fan-Blower*.—Patented July 17, 1855. (Plates, p. 103.)

D is the hub of the blowing-wheel, shaped like the frustrum of a cone, which is fastened on the shaft G; on the hub are fastened the screw-strapped blades E, the outsides of which blades are secured to an enclosing circular casing C.

The inventors say: We *claim*, where an ordinary parallel hub is used, a circular plate, or pieces of plate, fastened to the hub and blades E of blowing-wheel, enclosing the greater portion of the side of blowing-wheel towards the side K, to answer the same purpose for which the larger portion of the conical hub is intended, which is to prevent a central reacting current after it has passed through the blowing-wheel.

2d. The combination and arrangement of fan-blower, as described. We do not claim the parts described separately, but we claim the combination, in the manner set forth or shown, for the purposes named.

No. 13,346.—SIMON BARNHART.—*Fan-Blower*.—Patented July 31, 1855. (Plates, p. 103.)

Each of the blades F is made with a flange *b* on one of its sides, said flange being at right-angles with the blade from the tip to about the centre of the same, and therefrom is bent down and made to extend obliquely outward, in such a manner that a small spiral wing *c* is formed on each blade, which extends outside the case through the inlet air-passage B of the same, and, as the fan revolves, collects and forces an additional quantity of air into the case.

*Claim*.—Providing each of the blades of the fan with a lip or flange *b c*, substantially as and for the purposes set forth.

No. 13,859.—NATHANIEL WATERMAN.—*Improvement in Feet-Warmers*.—Patented November 27, 1855. (Plates, p. 103.)

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I am aware hot water has been used for heating a foot-warmer, and that foot-warmers have been cushioned or covered with carpet, &c.; this I do not claim.

But I *claim*, placing the hot-water vessel A within a case D made of wood, except on that side on which the feet are to rest, which side is made of thin sheet-metal *a*, and cushioned and covered (see F) as set forth, the whole being for the purpose of retaining the heat longer and giving it out more regularly to the feet, as described.

No. 13,871.—HENRY FORNCROOK.—*Improvement in Feet-Warmers*.—Patented December 4, 1855. (Plates, p. 103.)

Fig. 1 represents the inner box A inserted into the outer box D. This apparatus is strong on account of the corrugated surface of the inner

box; and the space between the corrugations will serve as a hot-air chamber, the interior of the inner box being filled with hot water.

*Claim.*—The arrangement of the angular supports C upon the inner box, thereby providing the foot-warmer with a hot-air chamber; also, with substantial supports for the outer box, in the manner described, for the purposes specified.

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No. 12,773.—JOHN R. ADAMS.—*Fire-Engine.*—Patented May 1, 1865. (Plates, p. 103.)

A number of cylinders B are placed radially in a circular band A, said band being encompassed by a ring I and cam J, which ring and cam are allowed to work loosely around band A. The cylinders are provided with the usual pistons and valves, and the pistons G are operated by rotating the cam, the piston-rods having rollers *e* attached to their outer ends, fitting in the groove *d* of the cam. By turning the cam continually in one direction, the power (either men or horse-power) applied at arms K acts continually upon the pistons.

*Claim.*—Having the cylinder B placed radially in a band or ring A, and encompassing said band or ring A with a band or ring I and cam J, the band or ring I and cam J being allowed to rotate around the band or ring A and cylinders B, and operating the pistons of the cylinders in consequence of their connexion with the cam, as herein shown and described.

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No. 12,491.—JOHN W. SMITH and JOHN S. GALLAHER.—*Improved Fire-Place.*—Patented March 6, 1855. (Plates, p. 104.)

This fire-place consists of a casing which is fitted within a recess formed in the chimney-stack. It has a throat *m*, provided with a draught-wheel (fig. 4) to induce a strong current of air from air-tube C. The air enters through the perforated blower-pipe *f* in numerous small jets. This pipe has in its centre a hole H<sup>1</sup>, which communicates with the hole in collar *g*, leading to the pipe C. Pipe *f* can be turned around its axis so as to admit more or less air from pipe C, and through hole H<sup>1</sup>. The draught through C is also regulated by means of a valve and valve-rod *c*. Attached to the outside of the fire-place are diaphragms dividing the spaces *y*, *z*, *y*, thus forming hot-air chambers and reservoirs or gas-receivers. Through these diaphragms pass the smoke-pipes L L, the lower (horizontal) ends of which communicate with the open ends of the blower-pipe. These ends have elbows *r*, which dip into water-chests *s*, which are arranged for the deposition of carbonaceous matter. The valves *h h*, together with valves J J, may be opened so as to afford a passage for the excess of matter immediately through the perforated blower-pipe out into the fire, to be consumed.

*Claim.*—The adjustable perforated blower-pipe with perforated collar, as described, arranged with the detachable fire-place, the latter having a perforated throat and double funnel ventilation, together with the valves, diaphragms, partitions, smoke conduit pipes, as constructed.

and arranged with the recess casings, forming air-chambers and gas-receiving apartments, substantially as described and for the purpose set forth.

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No. 13,758.—BERNARD O'REILLY.—*Improved Composition for Kindling Fires*.—Patented November, 6, 1855.

This composition consists of white turpentine, 16 parts; gum olibanum, 1 part; gum camphor, 1 part; powdered charcoal, 8 parts. The white turpentine is to be melted, and then the other ingredients to be added.

*Claim*.—The fire-lighting compound formed by the admixture of the several ingredients specified, in the manner and in about the proportions set forth.

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No. 12,159.—ST. JOHN O. DORIS.—*Composition for Fuel*.—Patented January 2, 1855.

The composition consists of 75 parts coal-dust; 10 parts coal-ashes, or alumina; 5 parts coal-tar; 5 parts saw-dust; 5 parts street-garbage. The above to be mixed cold, and pressed into form.

(No illustration.)

*Claim*.—The formation of an artificial fuel by the combination of street-garbage with coal-dust, saw-dust, and coal-tar, or other bituminous substance, substantially as hereinbefore set forth.

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No. 12,847.—THOMAS HOOKER and WILLIAM D. BEAUMONT, assignors to A. A. PRAY, N. M. HARRIS, E. C. LEMOYNE, J. R. JENNINGS, G. G. KIRK, and L. A. KIRK.—*Improvement in Artificial Fuel*.—Patented May 8, 1855.

The proportions of this composition are: One hundred parts of any of the known formations of earth; thirty parts of common lime; twenty parts of the dust or refuse of coal; two parts of clinkers or iron-dust; three parts of common rosin or pitch; two parts of carbonate of ammonia; eight parts of saw-dust or chips. The aforesaid are to be thoroughly mixed, and, by adding water, the material is to be softened to about the consistency of clay-mortar from which bricks are manufactured.

(No illustration.)

*Claim*.—The manufacture of a new article of fuel composed of lime, fine coal, clinkers, rosin, carbonate of ammonia, and bagasse, or their equivalents, mixed in the proportions substantially as herein set forth.

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No. 13,056.—WILLIAM D. BEAUMONT.—*Improvement in Artificial Fuel*.—Patented June 12, 1855.

150 pounds of turpentine (dry and brittle, and reduced to powder); 150 pounds of gypsum (also ground); one ton of clay (ground); 400 pounds of cut pine-straw; coal-screenings, about equal in weight to

the clay: the whole to be well worked together with water, formed into cakes, and dried in the sun.

*Claim.*—The manufacture of a new article of fuel composed of coal-screenings, clay or marl, pine-straw or litter, crude turpentine, and gypsum, or their equivalents, mixed in the proportions substantially as set forth.

No. 12,277.—MICHAEL GREENEBAUM.—*Improvement in Hot-air Furnace.*—Patented January 23, 1855. (Plates, p. 104.)

The valve S being closed in funnel *p*, the heat from furnace *a* descends through the branch-pipe *q* into the inner cylinder *l*, and is discharged into the drum *k*, and, passing through the openings *o o*, &c., in partition *n*, the residue passes off through pipe *r* to the chimney. By opening the valve S the heat passes directly into pipe *r*, thereby allowing the drum *k* to be cooled to any required degree.

*Claim.*—The arrangement of the cylinder *l* in the drum *k*, in combination with the perforated partition *n*, and the pipes *p q r*, and valve *s*, for the purpose of regulating and equalizing the radiation of heat of hot-air furnaces, substantially as set forth.

No. 12,286.—ELOY SCHMITZ.—*Improved Apparatus for Supplying Furnaces with Pulverized Metal.*—Patented January 29, 1855. (Plates, p. 104.)

The pulverized substance is placed in hopper A<sup>1</sup> B<sup>1</sup>, from which it falls into the threads of the horizontal screw-conductor Q, which conducts it to the vertical charging-tube N, which is provided with valve J, which is alternately opened by means of cam H and connecting-rod *t*, to discharge into the horizontal tube P<sup>1</sup>, which is placed within the blast-pipe Z leading to the furnace, so that the blast shall carry the pulverized substance to the furnace, the tube P<sup>1</sup> being provided with valves M L at the ends, which are closed whilst the valve J is open to permit the descent of the charge, and which, so soon as the valve J is closed, are opened that the blast may carry the substance to the furnace, the valve J preventing the blast from entering the charging part of the apparatus. The valve I, at the end of tube T (opening into the atmosphere) opens and closes simultaneously with valve J, so that any pressure of air in the apparatus due to the blast before it is shut off may be prevented from impeding the descent of the pulverized substance. The free discharge of the substance is aided by the action of a punch-rod S, which is worked by a crank R at the end of conductor-shaft D.

*Claim.*—Arranging within the blast-pipe of a furnace or other fire-place another and smaller pipe or tube, governed by valves to admit and cut off the blast, substantially as described, when this is combined with the charging-tube, also governed by a valve, substantially as specified, so that when the blast is forcing the pulverized substance from the tube within the blast-pipe, the blast shall be cut off from the

charging-tube; and when the charging-tube is open for the liberation of the charge, the blast shall be cut off by the valves below, as set forth.

Also, in combination with the above charging and discharging-tubes governed by valves, the employment of a branch-tube governed by a valve opening to the atmosphere to prevent the pulverized substances from being held in the charging-tube, by any excess or pressure which may be due to the entrance of the blast during the time the valves of the discharging-tube are opened, as set forth.

Also, in combination with the discharging and charging-tubes, the employment of the conductor and the punch-rod, substantially as described and for the purpose set forth.

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No. 12,305.—ABEL H. BARTLETT—*Hot-air Furnace*.—Patented January 30, 1855. (Plates, p. 104.)

The horizontal flat chambers D are formed of two thicknesses of metal. The air in passing through the chambers D is prevented from being impregnated with the gases escaping through the pores of the iron of flue C; for when it has passed through the inner thickness of metal of chambers D into the spaces *b*, (between the two thicknesses of metal surrounding chambers D,) it will, instead of passing through the outer thickness, naturally pass through the small pipes *c* into the vertical pipe *d*, and thence into the smoke-pipe I. The heated air therefore passes into pipe L, and into the apartment to be warmed in a pure state.

The cold air and the heat from the fire-chamber pass upward simultaneously in their respective passages C and D, and cross each other at right-angles, the air in D being exposed to two heated surfaces of flue C, viz: above and below; and the horizontal portions of flue C communicating heat to two surfaces of the chambers D, also above and below. The cold air, therefore, that enters the opening K passes over a great area of heating surface in passing upward to pipe L.

The inventor says: I do not claim, of itself, in a hot-air furnace, preventing the admixture of deleterious gases, generated on hot metallic surfaces, with the warm fresh air, by means of jacketed air-spaces interposed between the surfaces exposed to the action of the fire and the air to be heated, nor yet providing an escape-pipe or passage to carry off the deleterious gases;

But I *claim*, 1st, in combination with the arrangement specified of the serpentine fire and air-flues or courses C and D, providing each horizontal flue with an escape-casing or jacket, connected by branch or otherwise (each horizontal casing) with a gas-pipe or pipes, uniting them with the chimney, as shown and described, whereby a sure and quick escape is established for the deleterious gases at each horizontal flue, to travel where the fire and air are retarded in taking their upward course; and the air being heated, consequently more exposed to absorption of deleterious gas, and whereby the stratum of air being heated, and travelling in succession the several horizontal flues D, is protected from admixture with it of the deleterious gases throughout its entire exposure to heat in the furnace, as described.

2d. I claim the arrangement of the fire-flues C, and air-heating passages D, specified, and traversing at right-angles to each other, when combined with division-plates G, or their equivalents, so arranged that the one stratum or current of air to be heated passes upward throughout the several hot-air passages or channels in a serpentine course given, the flame simultaneously passing upwards in the fire-flues C, over, under, and between the hot-air passages or flues D, as shown and described.

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No. 12,448.—GEO. S. G. SPENCE.—*Improvement in Hot-air Furnaces*.—Patented February 27, 1855. (Plates, p. 104.)

*Claim*.—Carrying the smoke-discharge flue of the fire-chamber back through the fire-chamber, substantially as specified, whereby the draught of a long flue is promoted.

Also, carrying the smoke-discharge flue of the fire-chamber or radiator back through the fire-chamber, in combination with not only providing it with one or more orifices for the discharge of the combustible properties or gases of the smoke into the fire-place, but with diminished opening or passage sufficient only to carry off the non-combustible volatile portions of the smoke.

Also, combining with the discharge-pipe O and the orifice R the pipe to extend back into the discharge-pipe O, and with respect to the openings T T, as specified; the same being to facilitate the passage of the combustible gases into the fire-place.

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No. 12,425.—WILLIAM SAGE.—*Improved Air-Heater*.—Patented February 20, 1855. (Plates, p. 104.)

The object of this improvement is to insure the direct contact of the air with the heating surface as it enters the apparatus, and then to pass immediately from said surface into the hot-air reservoir; thereby causing the air to be equally and uniformly heated, and preventing it from remaining in contact with the heating surface long enough to be decomposed.

*Claim*.—Surrounding the chamber of combustion with series of short annular or segmental air-heating compartments *a a*, which are combined with series of inclined air induction-pipes *b b*, and communicate with the hot-air reservoir *e* which surrounds said compartments by means of the induction apertures *i i*, substantially in the manner and for the purpose set forth.

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No. 12,533.—JAMES H. SUTTON.—*Improvement in Air-Heating Furnace*.—Patented March 13, 1855. (Plates, p. 105.)

This furnace has two separate and distinct fire-chambers, A B. The air in the hot-air chamber D has free access to all sides of both furnaces, and likewise to all sides of the ascending smoke-pipe C and the descending smoke-pipes *g g*, thereby forming a great amount of heating surface. Either of the furnaces can be used without the other,



and a single furnace will heat the air sufficiently in the air-chamber, while the other furnace may be cleaned out and replenished with fresh coal.

*Claim.*—The arrangement of the furnaces A B, the descending smoke-pipes *g g*, and the central smoke-pipe C, with each other and with the single air-heating chamber D, substantially in the manner and for the purpose set forth.

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No. 12,546.—HOWARD DELANO.—*Improvement in Feeding Fuel to Furnaces.*—Patented March 21, 1855. (Plates, p. 105.)

The operation of feeding in the coal is as follows: The feed-box D (sliding in ways C) is run out to the opening A<sup>1</sup> in the top plate A, and the coal thrown into said box, the bottom *b i* being down, and resting on *e*. The handle K is now turned, which moves the crank I around its fulcrum J. Crank I, which passes through slot L in piece G, (projecting from the feed-box D,) acts on arm M, and raises arm F, which has its fulcrum in the pin *d*, projecting from piece G, thereby raising the bottom *b i* of the feed-box, and forcing the coal up and into the fire-box B. At the same time the action of crank I on slot L has drawn back the feed-box D, underneath the fire-box B. (See fig. 1.) Just before crank I slips past M, the pin *h* (on arm F) has entered slot *g*, in trigger H, which is pivoted in *f* to piece G. Thus lever F, and with it feed-box bottom *b i*, are continued to be held up, after I has passed M. By continuing to turn the handle K, the crank I enters the upper portion of slot L, and runs the feed-box out in its ways C, as above mentioned. In its descent it forces H away from *b*, thereby dropping the bottom *b i*.

Fig. 2 exhibits only one-half of a bottom view of the furnace, the other half being exactly alike.

*Claim.*—The combined use of the feed-box and grate-bars, or cut-off, for feeding fuel into the under part of the burning mass in the fire-box, or their mechanical equivalents, as described.

Also, the combination of the crank-shaft I, slotted piece G, lever F, and trigger H, or their mechanical equivalents, for sliding the feed-box and grate or cut-off, and for raising and lowering the bottom of the feed-box, substantially as described.

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No. 12,602.—JOHN MCNEIL.—*Improvement in Charcoal Furnaces.*—Patented March 27, 1855. (Plates, page 105.)

The inventor says: I do not claim a hollow or tubular iron beam, merely as such, as I am aware that hollow beams have been and are commonly used in various structures;

But I *claim* supporting the retort tubes B B by a hollow or tubular beam or beams, with open ends, applied substantially as described, so that one end of each is in communication with the cold or atmospheric air outside the furnace, and the other with the chimney or escape-flue, whereby a current of cold air is caused to be induced through the beam by the draught of the chimney or flue, for the purpose of keeping it

comparatively cool, preventing its burning, and rendering it a firm and durable support to the retort tubes.

And I also claim constructing the furnace with one or more arched walls H, extending across it, substantially as described, to support the joints in the beams G G, when the said beams are made in two or more lengths, and also to support the side-walls and roof.

No. 12,678.—MOSES THOMPSON.—*Improvement in Furnaces for Burning Wet Fuel.*—Patented April 10, 1855. (Plates, p. 105.)

This improvement is for the process of heating the fuel to an intense degree in a nearly air-tight chamber, and then admitting a free supply of air to promote its rapid combustion, to be conducted without interruption to the operations which the heat generated is to effect.

Fires being lighted in all the fire-chambers A A<sup>1</sup> A<sup>2</sup>, two of the three have the doors H of their ash-pits closed and the dampers K nearly closed, so as to allow a sufficient escape of the combustion gases to prevent explosion. The other fire-chamber, in the mean time, has the damper K open and the door C sufficiently open to admit a quantity of air corresponding to the degree of heat required. When the fuel in the open chamber is sufficiently reduced, that chamber is closed and another opened until the fuel within is reduced, when it is closed, re-charged, and another opened, and so on.

The inventor says: I do not claim the within described arrangement of a series of fire-chambers to communicate with one common fire, irrespective of the purpose for which, and the manner in which, I employ the said arrangement; but what I do *claim* is the combustion, for the purposes of a high degree of heat, of bagasse, refuse tan, saw-dust, and other refuse substances, or very wet and green wood, by the employment of a series of fire-chambers, arranged in any manner, substantially as described, to communicate with one flue, when any number of the said chambers are nearly closed to the flue and to the admission of air when first charged, as described, while the remaining chamber or chambers is in free communication with the flue and has a free supply of air admitted, and each chamber in its turn is nearly closed and then opened, and has air admitted, whereby the heat required is furnished by the combustion of the fuel in one or more chambers, while the fuel in the other chamber or chambers is being heated and decomposed to a desirable degree, as herein set forth, no artificial blast being used.

No. 12,749.—O. W. BAILEY, assignor to MANCHESTER LOCOMOTIVE WORKS.—*Improved Furnace for Locomotives.*—Patented April 17, 1855. (Plates, p. 106.)

The whole furnace is surrounded by water-space E. The fires being started, the fuel in one of the compartments F is allowed to become incandescent; the damper M is then opened and M<sup>1</sup> is closed (by means of rods b); fresh fuel is then thrown upon the fire in compartment F<sup>1</sup>.

the unconsumed gases and smoke from which pass through opening H over the whole length of the incandescent fire in compartment F, through the opening L into the combustion chamber K; these gases thus become highly heated, and immediately mixed with those rising from the incandescent fire, and on reaching the combustion chamber they are supplied with air through opening N to thoroughly consume them. This takes place immediately in front of tube-plate P. When compartment F<sup>1</sup> has ceased to throw off smoke, damper M<sup>1</sup> is opened and M closed, and fresh fuel thrown into F, the smoke from which passes through opening H over the fire in F<sup>1</sup>, and through the opening L<sup>1</sup> into the combustion chamber, as before; and so the operation is repeated alternately in one of the two compartments.

*Claim.*—The within described arrangement of the compartments F F<sup>1</sup>, communicating with each other by the opening H, and with the combustion chamber K by the openings L L, whereby the unconsumed gases from the freshly-fed fire are heated by passing over the whole length of the incandescent fire, and consumed in the chamber K, in the manner substantially as herein set forth.

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No. 12,800.—WILLIAM R. THOMSON.—*Improvement in Furnaces for Heating Wrought-Iron Wheels for Forging.*—Patented May 1, 1855. (Plates, p. 105.)

The valves J J<sup>1</sup> are for the purpose of cutting off the blast, and blowing either of the furnaces separately. The degree of heat or draught to the furnaces may be controlled by dampers F F<sup>1</sup>, in combination with said valves; and at the same time the fire from either of the furnaces D or D<sup>1</sup> may be alternately directed to the upper and lower sides of the hub, until it has acquired the necessary degree of heat. For instance, closing damper F<sup>1</sup> and opening F, and shutting off the blast from D and opening J<sup>1</sup>, the fire from furnace D is stopped, and the fire from furnace D<sup>1</sup> passes to the top of the hub, and surrounds it on all sides as it descends to furnace D, and passes out through flue G to the chimney.

This arrangement obviates the difficulties attending the heating and hammering together one side of the hub at a time, as in this furnace both sides of the hub are heated entirely through before it is swedged together.

*Claim.*—The arrangement of the furnace A, with double fire-places or chambers D D<sup>1</sup> furnished with flues G G<sup>1</sup> and dampers F F<sup>1</sup>, in combination with the wind-pipe I and valves J J<sup>1</sup>, for the purpose of alternately heating both sides of the hubs of wrought-iron wheels, or other articles, between the nozzles R R, in the manner herein specified.

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No. 12,807.—ELIZABETH A. STILLMAN, administratrix of ALFRED STILLMAN, deceased.—*Improved Furnace for Burning Bagasse.*—Patented May 1, 1855. (Plates, p. 106.)

A proper fire having been built upon the hearth b, the cane mill A is set in motion, and the cane fed to it as usual. According to the con-

struction of the mill A, the cane receives impressions from a second pair of rollers, in order to express all the juice possible. From these last the bagasse is delivered upon the endless carrier *a*, and conveyed along to the top of the furnace B, where it is received by the feed apparatus and discharged into the furnace. The blast is so regulated as to maintain such intensity of combustion as will effect the consumption of the bagasse as fast as delivered from the mill. The flame and hot gases are discharged by the aperture *f*, and pass along the flue under the boilers C.

*Claim.*—The herein-described furnace for employing bagasse, without previous drying, as fuel for generating steam.

No. 12,875.—S. J. RUSSELL.—*Hot-air Furnace*.—Patented May 15, 1855. (Plates, p. 106.)

This improvement aims at obtaining a large heating surface by causing the smoke and heat from the fire-chamber B to pass up through trunks E, horizontal pipes I, and trunks F, into the smoke-pipe H. The plates K give a circuitous direction to the cold air around and between the pipes I, thereby subjecting it to a great area of heated surface.

*Claim.*—The employment of the vertical trunks E F, horizontal pipes I, and horizontal plates K K, connected with the fire-chamber B, and enclosed by a casing A, when arranged substantially as herein shown, and for the purpose as set forth.

No. 12,883.—ROBERT WICKS.—*Improved Furnace Grate-Bar*.—Patented May 15, 1855. (Plates, p. 106.)

No description required.

*Claim.*—The construction of the grate-bars of furnaces with dovetails or other analogous interlockments, so as to connect the bars together, and keep them from twisting out of place, or sliding from the bearing bars, while affording the greatest facility in removing defective and inserting new bars. (See figure.)

No. 12,901.—MICHAEL B. DYOTT.—*Improved Warm-air Furnace*.—Patented May 22, 1855. (Plates, p. 106.)

The fuel-chamber E consists of a series of rings E<sup>1</sup> with radial arms E<sup>2</sup> cast on their outer periphery, in such a manner as to enable the heat of the rings to be drawn off by said arms, and the rings to be removed and replaced if required. A space is formed between and entirely around the fire-chambers, to admit a sufficient draught of air to intermingle with the inflammable particles of the gases in the space L above the fire, and enable them to be precipitated and consumed. Thus the said upper space L is to be prevented from being obstructed with fuel or ashes.

*Claim.*—The arrangement of devices herein described, to wit: The movable fire-pot E, the air-flue J<sup>1</sup>, and chamber or fire-space L, constructed and operating in the manner and for the purpose substantially as above set forth.

No. 12,967.—JACOB C. SCHLOUGH.—*Improvement in Grate-Bars for Furnaces*.—Patented May 29, 1855. (Plates, p. 106.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim any particular number of mortises and tenons on each bar, as such must be decided by the length of said bars; but I *claim* the mode of constructing grate-bars for furnaces, with any convenient number of square or oblong tenons on one side, and a corresponding number of similarly shaped mortises on the opposite side, substantially in the manner described, and for the purpose specified.

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No. 13,015.—GEO. S. G. SPENCE.—*Improved Furnace for Warming Buildings*.—Patented June 5, 1855. (Plates, p. 106.)

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I do not claim combining the dome of the smoke-chamber of an air-heating furnace with one or more pipes so leading from the said dome, or from the said smoke-chamber, that the smoke and gases in passing against such dome shall be deflected in streams divergent from, or with respect to, the fireplace.

Nor do I claim arranging an exit-tube within the middle of a reverberatory chamber, and surrounding such tube by another tube or chamber, which will prevent the volatile products of combustion, when descending towards the fuel, from coming into contact with the flame thereof before they pass into the receiving end of the tube.

But I *claim* so arranging and combining the exit-tube G, within the reverberating dome and smoke-chamber, and with respect to the fireplace thereof, as specified, that the smoke and gas reverberated from the dome may not only pass towards the exit-tube in convergent streams, but be deflected towards and against the fuel or flame thereof before they may escape into the lower end or mouth of the tube, my improvement being productive of a more perfect combustion of the said volatile products than takes place when the exit tube is surrounded by another tube or case, which separates the descending gaseous currents from the fire before they escape into such tube.

And I claim so combining the valve H and the discharge-tube G, that the tube may be movable with the valve, and pass through the valve-opening as described; the valve thus serving to support the tube, and rendering unnecessary any arms or such like devices, which would tend to collect soot and otherwise obstruct the draught through the valve-opening.

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No. 13,031.—CALVIN FLETCHER.—*Improvement in Supplying Furnaces with Hot Air*.—Patented June 12, 1855. (Plates, p. 106.)

The object of this apparatus is to heat the air preparatory to supplying it to furnaces, &c. The escape-steam from the engine enters at the top of this apparatus through pipes *f*, fills the upper annular chamber *d*, and descends into the several tubes *e*, connecting with the lower annular chamber *d'*, and thence whatever steam remains passes through

pipe *g*, which latter also carries off the water of condensation. The rotary fan *a* draws in the external air through the openings around the axis of the fan at top and bottom, and drives the air through the spaces between the tubes, whereby the air is heated. The heated air passes through pipes *i i* to the furnace.

The inventor says: I am aware that the heating of air by contact with steam-tubes has been done before.

But I *claim* the arrangement described of the fan *a*, steam-tubes *e e*, together with the inlet passages for steam and cold air, and the discharge of hot air and water of condensation, in the manner, or its equivalent, and for the purposes set forth.

No. 13,092.—JNO. L. KITE.—*Improvement in Hot-air Furnace*.—Patented June 19, 1855. (Plates, p. 106.)

The products of combustion rising from the fire impinge against the inside of the casting *D*, and, being thence reverberated, pass through the grated passages *e* in the flange *f* into the spiral passages formed by the vanes *d* on casting *D*; from whence they issue to meet with a second and similar casting, and so on, (if there are more than two,) and are finally discharged into the chimney through pipe *G*. The cold air passing through opening *L* into the spiral passages formed by the vanes of castings *B* and the exterior casing *A*, and ascending in a zigzag direction, has a corresponding amount of heat imparted to it.

The inventor says: I am well aware that spiral flues and air passages have been commonly used in connexion with hot-air furnaces, which, however, have generally been made hitherto in the shape of pipes, or by means of loose scraps introduced into the flues and passages. Therefore, I do not claim exclusively the use of spiral passages for hot-air furnaces.

But I *claim* the combination of castings *B* and *D* with their vanes and with the outside casing *A*, constructed and operating in the manner shown, for obtaining a great amount of heating surface at the expense of a small quantity of fuel.

No. 13,332.—SAMUEL T. JONES.—*Improvement in Furnaces for Treating Zinc-Ores*.—Patented July 24, 1855.

The ore properly mixed with carbonaceous matter is placed on the hearths *d d* in furnace *a*. When the furnace is started, the aperture *e* is to be opened and damper *g* closed, so that the products of combustion shall escape into the chimney. So soon as the ore begins to give out the vapors of zinc, the aperture *e* is to be closed and *g* opened, when the vapors will pass into and through the series of separating chambers, (from whence the solid impurities can be drawn out through holes *o*,) through the exhausting fan *p* and into the collecting-chamber *q*.

*Claim*.—The double use of the chimney, substantially as specified, by combining the said chimney, governed by a damper or register, with the furnace and collecting-apparatus, and interposed between the two, substantially as specified, whereby the iron contained in the ore can be worked after the zinc has been worked and collected, as set forth.

No. 13,374.—SAMUEL N. BRIGGS.—*Improvement in Hot-air Furnaces.*—Patented July 31, 1855. (Plates, p. 107.)

Passage R is provided with a hinged damper S, from which a crank T projects downwards, and is jointed to a sliding-rod U, which extends horizontally through the door-frame V, and so as to rest against door N when it is closed; the damper, under such circumstances, being elevated, as represented in the figure. When the door is opened, the damper, by its own weight, will fall down and close the passage R. The act of closing the door will press U inward, and elevate the damper. A is the fire-place, and H the grate.

*Claim*—The passage R, leading from the chamber M to the hot-air chamber E, in combination with the damper S, crank T, and rod U, operated in manner as described, and for the purpose as specified.

No. 13,432.—JOSEPH LEEDS.—*Furnaces for Heating Buildings.*—Patented August 14, 1855. (Plates, p. 107.)

The nature of this invention will be understood from the claim and engravings. Fig. 1 is a vertical section of the furnace, the upper part of it being left away, as it has no reference to the claim. Fig. 2 is part of a cross section.

*Claim*.—Combining with the cylinder or fire-pot of an air-heating furnace a reservoir or fountain of water M, which furnishes a wet surface, against which the incoming air strikes for moistening it and depositing its dust, and a series of curved, zig-zag, fluted, or corrugated plates L, in the manner described, for enlarging the heating surface of the furnace, and forming air-ducts for the heated air to pass through, substantially as described.

No. 13,439.—SAMUEL B. SEXTON.—*Improvement in Furnaces for Heating Buildings.*—Patented August 14, 1855. (Plates, p. 107.)

The fire-chamber is covered with a pair of concavo-convex plates D D<sup>1</sup>, with their convex surfaces outward, and slightly separated along their edges, the space between the plates communicating by pipe H with the external air, so that the current will pass through this space, and issue from the opening between the edges of the plates. The object of this is to utilize the heat of the upper portion of the fire-chamber, and at the same time admit of the furnace being constructed with a diminished height, by the cooling of the covering of the fire-chamber, produced by the current of air through the covering-plates, thus adapting the furnace to low cellars, &c.

*Claim*.—The convertible covers D D<sup>1</sup> of the fire-chamber, in combination with the pipe H, constructed, arranged, and operating substantially as and for the purposes specified.

No. 13,526.—THOMAS MASKELL.—*Improvement in Consuming Escape Steam, as an adjunct in Heating Furnaces.*—Patented September 4, 1855. (Plates, p. 107.)

To the usual escape-valve A of an engine is attached an iron pipe B of sufficient capacity to allow of the expansion of the escape-steam.

at least twenty times its volume, to prevent explosion. The pipe extends through the furnace, and terminates in perforated bulb C. The pipe becoming red-hot, a vacuum is formed therein; steam being permitted to pass into the pipe, the high heat and affinity for iron arrests the oxygen of the steam, while the hydrogen passes through the bulb, and adds to the intensity of the fire in the furnace.

*Claim.*—The use of escape-steam decomposed at a high heat by means of a pipe B and bulb C, or their equivalents, so placed above the bed of coal as to admit of its combining readily with the gases eliminated therefrom, as an economical adjunct in heating boilers, as set forth.

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No. 13,525.—LEWIS M. LEEDS.—*Improved Apparatus to prevent an Over-supply of Coal to the Fire-Box of Hot-air Furnaces.*—Patented September 4, 1855. (Plates, p. 107.)

When an undue quantity of coal is thrown on the fire F, the excess of coal will fall over the side-walls G and through space S, on to valves H, which latter will be opened by the weight of the fuel until it has dropped on to the lower grating S'. When the excess of fuel has thus passed through, the valves (being properly balanced) will close again, so as to prevent an undue draught.

*Claim.*—The arrangement in the fire-chamber of the balance-valves H H, for the purpose of preventing an undue quantity of coal from remaining in the fire-box.

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No. 13,873.—SAMUEL H. GILMAN.—*Improvement in Bagasse Furnaces.*—Patented December 4, 1855. (Plates, p. 107.)

The object of this improvement is, first, to prevent fire and smoke issuing from the furnace (under the force of the blast at the lower part of the furnace) where the bagasse is fed in, and where the fuel is put in at the ordinary furnace door; and, secondly, to place the ash-pit so that the contents of the furnace can readily be tumbled and thrust into it without loss of time or heat. This thrusting process is effected through the doors E. The pit D, thus arranged as a secondary furnace between furnace A and boilers C, performs the function of receiving and retaining, in a combustible condition, the unconsumed bagasse, which, when consumed, can be withdrawn through the doors of pit D. The blast enters from blast-pipe G, through pipes y, J J, and perforations P<sup>1</sup>, so that an inward blast can be at all times kept up. Another inward blast is created through blast-pipe L and perforations p. These inward blasts force the smoke, fire, and sparks towards the passage-way B, and materially aid operations.

*Claim.*—The pit D, located between the furnace and the boilers, in a passage-way B, as described, and for the purpose specified.

Also the perforated blast-pipes G and L of the feed, opening as arranged and described, and for the purpose specified.



No. 13,887.—CHARLES SCHINZ.—*Self-regulating Hot-blasts. for Furnaces.*—Patented December 4, 1855. (Plates, p. 108.)

The metal bar *i i* is placed in the pipe *h*, conducting the hot air, so that this bar will be contracted and expanded according to the variations in the temperature of the hot air, and thereby will be caused to move the sector *t* about its fulcrum, to which sector it is connected. The cogs upon the sector will actuate the gear-wheel *u* and the eccentrics *v* upon the axis of said gear-wheel, so as to elevate or depress the valve-rods *x*, and thereby actuate the valves *z z* in pipe *d*, which introduces the cold air.

*Claim.*—The use of the pipe *h h* and the bar *i i*, when arranged as set forth, and operating conjointly, by means of suitable gearing, upon the eccentrics *v v*, for opening and closing the valves *z z*, substantially as described, so as to divide a given volume of air of varying temperature and pressure into proportionate parts, and for the purpose set forth.

No. 12,267.—WILLIAM F. SHAW.—*Improved Gas-Heater.*—Patented January 23, 1855. (Plates, page 108.)

The inventor says: I am aware that argand burners and some fire places have their flame or fuel chambers supplied with an internal and external current of air.

I therefore do not claim the mere application of a means of applying air externally to a flame or mass of fuel in a chamber, although in my apparatus I accomplish this; but, while I obtain such an advantage from an external current of air, when let into the chamber C, I secure a further effect, viz: that of supplying air to the surplus chamber or reverberatory dome F. It will be seen that the chamber C has an important relation to the surplus chamber in the gas-burning apparatus.

I therefore *claim* the arrangement and combination of the air-pipe A the perforated distributor B, the air-chamber C, the flue-pipe E, and its surrounding chamber of combustion or reverberatory dome F, provided with an outlet-pipe at or near its lower end, the said reverberatory dome or chamber being made to operate in connexion with both the internal and external air-ducts, and for burning the surplus or volatile products, as specified. (See engraving.)

No. 12,515.—ANDREW MAYER.—*Improved Valves for Gas-Burners.*—Patented March 13, 1855. (Plates, p. 108.)

Instead of inserting the cups and valves in the burner itself, in the usual way, and which is attended with various difficulties, the inventor places them in a short tube *c*. Owing to the facility of inserting them in a short tube, only a very small quantity of white lead is necessary to make the joint around them. The tube *c* is not placed in the burner itself, but in a small chamber A, which is placed below the burner B.

*Claim.*—Fitting the valve-cups *b b* to a tube C, which forms a valve-box, in which all the cups and valves can be properly fitted without

difficulty, and inserted conveniently in their place in the burner, or into any chamber prepared to receive them, as fully described.

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No. 12,717.—SOLOMON B. ELLITHORP.—*Improvement in Putting a Gas-Generator in a Parlor Stove.*—Patented April 17, 1855. (Plates, p. 108.)

The space *b* of the stove, surrounding the retort *A*, is filled with coal, and also the retort. The coals in space *b* having been kindled, the stove is heated and the room warmed. At the same time the retort, and the coal within the same, is heated, and the gas passes through pipe *a* to the condenser, and from it, by means of flexible pipes, to the clarifier, and therefrom to the gasometer, and can be used to illuminate the room. The gas having been extracted from the coal in the retort, the bottom of the retort is opened and the coke taken out, which then can be put into the stove and burned for the purpose of producing heat.

The inventor says: I do not claim the stove, condenser, clarifier, or gasometer, these being all well-known old devices; but I do *claim* the combination of the coal-stove and retort, as already fully described, thus combined, making a portable coal-gas generator, for the purposes set forth in this specification.

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No. 13,130.—CHARLES H. JOHNSON.—*Improvement in Gas-Burners.*—Patented June 26, 1855. (Plates, p. 108.)

This gas-burner is constructed with a cylindrical chamber *A*, into which the gas is received through a small gauge-hole or orifice *a*, formed through the bottom, *b*, of said chamber. Within this chamber there is arranged a hollow cone distributor *B*, which is open at its lower end, and contains a series of wires, as seen at *C*, they being arranged somewhat like the bristles of a brush, and made to extend downwards from the vertex of the cone and to constitute a purifier or a means of dividing or purifying the gas, or separating from it much foreign matter, which, if consumed with the gas, would be detrimental to its light-giving property. The upper part of the distributor *B* is fastened to a diaphragm or plate *D*, which is perforated so as to permit gas to freely pass through it, and into a tapering or bell-mouth chamber *E*, arranged over the chamber and between it and the discharging mouth or mouths *c c* of the burner. This diaphragm is forced up against the top of the chamber *A* by means of a spring *F*, which is arranged within the distributor and presses against the bottom of the chamber *A*. The base of the distributor *T* is provided with a flanch, as seen at *d d*, whose external edge is serrated or notched, as seen at *e e*; the object of the flanch being to centralize the distributor within the chamber, such distributor, when in use, being somewhat elevated above the bottom of said chamber. In the operation of a burner so constructed, the gas on entering it passes and flows among the wires of the purifier, and by means of the distributing cone is reverberated.

and drawn outward, and made to pass underneath the flanch *d* and upward into the chamber A, from whence it flows through the plates or diaphragm D, and into the tapering or gathering chamber E, placed over the same. By means of this last-named chamber, the streams of gas are caused to gradually approach one another and flow freely towards the discharging orifices, without such injurious impingement against one another as will produce a flickering of the flame; by means of the tapering chamber, great steadiness of the flame is obtained.

*Claim.*—Combining the gas distributor and purifier B, as described, with the burner, so as to operate therewith, substantially as set forth.

No. 13,134.—WM. WILER and LUCIEN MOSS.—*Improved Gas-Lighter*.—Patented June 26, 1855. (Plates, p. 108.)

This instrument serves for turning on gas, lighting gas, and carrying matches.

A catch B, which runs in a slot in rod E, carries (inside of said slot) a taper *i* for lighting. F is the turner or wrench, and the handle or holder G encloses the matches.

The inventors say: We are aware that the taper, tube, and turner have heretofore been separately used, and therefore we do not claim them.

We *claim* the arrangement, as described, of sliding-spring, catch, taper, and wrench, with the holder, for the purpose set forth.

No. 13,283.—EDWIN D. WILLARD.—*Improvement in Gas-Burning Grid-irons*.—Patented July 17, 1855. (Plates, p. 108.)

The nature of this improvement consists in having two lines of escape-holes for the gas, at a distance from the centre upper-line of each bar *d* of one-eighth the circumference of the bar, instead of one row of holes on the centre upper-line; this covered with a corrugated plate moving upon ways, and operated by rack and pinion so as to make the flame act upon each part of the corrugated plate.

The inventor says: I do not claim the perforated tubes nor the corrugated plate.

But I *claim* the gas-burning tubes in combination with a corrugated plate, acted upon by rack and pinion, and moving upon slides, the whole being combined substantially as set forth.

No. 13,739.—JOHN R. HUNTER, assignor to SAMUEL R. BLAIR.—*Improvement in Gas-Brackets*.—Patented October 30, 1855. (Plates, p. 109.)

The two positions of this bracket, as represented in the engravings, will sufficiently explain the nature of this improvement.

*Claim.*—The use of the parallel arms or tubes in combination with

the revolving joints, in the manner substantially above described, so as to make the bracket or fixture self-sustaining, in any position or elevation, and at the same time maintain the burner in its level position, so as not to disturb a glass or shade.

No. 13,789.—CHARLES H. JOHNSON.—*Improvement in Argand Gas-Burners*.—Patented November 13, 1855. (Plates, p. 109.)

The lip or flange *b* forms a spout *c* extending around between it and the inner surface of the distributor *H*, for the purpose of catching and retaining the coal tar or liquid deposit which, when the distributor is in use, collects on the inner surface.

In a common argand gas-burner, the impingement against one another of the currents of air which flow into its inner chamber produces an unsteadiness of the flame. In this gas-burner, however, the currents of air entering at *D*, when the burner is inflamed, are directed upward by impinging against the surface of the cone *B*, so as to prevent, in a great measure, the disturbance of the flame arising from the reason stated above. By means of the bulb-shaped rod *E* the current is prevented from attaining a whirling motion, and the flame is spread a little so as to increase its light-giving surface.

*Claim*.—Making the distributor with a catch lip, flanch, or spout extending around its bottom, in the manner and for the purpose described.

Also, combining with the argand burner a conical deflector, or the cone and its exterior rod and bulb, the same being arranged in the middle of the air-chamber of the burner, and for the purpose as set forth.

No. 13,904.—JOHN S. GALLAHER, Jr. and JOHN W. SMITH.—*Improvement in Gas-Apparatus*.—Patented December 11, 1855. (Plates, p. 109.)

The tank *b* is to be filled with the proper quantity of water, and the perforated strainer *K* to be arranged in place, and the receiver *m* to be adjusted within the tank; in order to cause the receiver to sink within the tank, the air is exhausted through escape-pipe *n*, the stop-cock *o* being open. When the receiver is sufficiently depressed, the stop-cock is to be closed, in order to prevent the escape of gas. The branch retort *X* being entirely empty, and being arranged within a common furnace or fire-place, is to be highly heated, and then the oily or fatty matter is to be fed into the mouth *z* of the feed-pipe. The pipe being provided with a cock *z\** and coil *z x*, enables the liquid matter to flow slowly and to drip in small drops into retort *X*, where gas is instantly evolved, and passes through the conduit-pipe into main retort *C*, containing quick-lime in a small quantity, which is also subjected to heat in order to diffuse it, so that the gaseous matter may mingle with the diffuse fumes of lime, and thus in part be divested of the fatty impurities, which are absorbed by the diffuse lime, and, ascending upwards through vertical pipe *I*, issue out of goose-neck *J*, the end of which passes

downward through the floating strainer, which, being above the surface of the water, affords a space between the water and its surface wherein the gas accumulates in volume, and thence presses upward through the lime and fuller's earth mixture, (sprinkled upon the surface of the strainer,) and thus the gas is effectually purified.

The inventor says: Disclaiming all and every part of our apparatus, taken individually, we *claim*, solely, the arrangement of the said parts, and specifically of the retort X with Hooke's blow-pipe C, combined with the furnace *a a a a*, the water reservoir *b b b*, the strainer K K, and the receiver *m m*, in the manner as specified, and for the purpose of constituting a compact and portable gas generating and purifying apparatus.

No. 12,509.—J. W. HOARD.—*Improvement in Gas-Regulators*.—Patented March 14, 1855. (Plates, p 109.)

A, regulating-chamber placed between the inlet *a* and the outlet *b* of the supply-pipe; B, induction or regulating valve; C, inverted cup floating in a fluid D, and connected directly to the valve by a stem *d*, which latter is weighted to graduate the pressure in the pipe. The interior of C is exposed to the atmosphere, which has free access at *e*. A quantity of air confined in *f* acts as a spring, counterbalancing the pressure of the gas, and gives the requisite buoyancy to the cup.

The inventor says: I am aware that the inverted cup has been and is employed by Kidder and others; and therefore I disclaim it, irrespective of the peculiar arrangement and combination described.

I *claim* the arrangement of the inverted cup, so that only the upper side or exterior is exposed to the pressure of the gas, and the under side or interior is exposed to the atmosphere, when this is combined with the application to the said cup of the air-spring *f*, or its equivalent, substantially as and for the purpose set forth.

No. 12,692.—SAML. P. PARHAM.—*Improved Gas-Regulator*.—Patented April 1, 1855. (Plates, p. 109.)

The fluid is admitted through tube D into cistern A, wherefrom it enters discharge pipe C. Tube D is beveled on top so as to fit to the inside of the conical-valve E, and is provided with scores *a* to allow a sufficient supply of fluid to escape, when the pressure is so low as to let the valve settle on tube D. When the pressure becomes higher the valve is lifted up and finally pressed into the opening of the discharge-pipe, which is a little elliptical so as still to allow the necessary supply to escape when the valve is forced into said opening.

*Claim*.—The conical valve or its equivalent, operated by a jet of air, gas, or water, applied immediately under it; or against a cap or valve connected to it, in combination with an elliptical seat or its equivalent, so constructed as to let the requisite supply of air, gas, or water, escape when the valve is forced into the seat. The whole being so constructed and arranged as to regulate and equalize the flow of air, gas,

or water, and furnish a uniform or nearly uniform supply under different degrees of pressure, substantially as described.

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No. 12,844.—G. B. WOODRUFF and J. N. PALMER.—*Improvement in Gas-Regulators*.—Patented May 8, 1855. (Plates, p. 109.)

The operation of this apparatus is apparent from the figure.

*Claim.*—1st. The employment of adjustable escape-tubes or passages *b b* at the upper part of the air-chamber C, in connexion with valves *d d'* attached to a float I, which rises and falls with the water in the air-chamber, the said valves acting substantially as herein described to close the said tubes or passages to confine the air in the air-chamber when the water or other liquid reaches a certain level therein, and thus prevent the water being in the gas chamber B pressed down below the regulation float H.

2d. The employment of two induction-valves F G, arranged and connected by a spring *h*, in such a manner that, when the pressure of gas in the gas-chamber increases to such a degree that the action of the float would close both of the said valves, and entirely shut off the gas, the said spring will yield to the pressure of the gas upon the under-side or front of one of the valves, and allow that valve to remain open until the pressure in the gas-chamber is reduced, and the level of the liquid therein is restored sufficiently to open the other valve, substantially as herein set forth.

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No. 12,943.—SAMUEL W. BROWN.—*Improvement in Gas-Regulators*.—Patented May 29, 1855. (Plates, p. 109.)

The inventor says, in his specification: This gas-regulator is so constructed that the top will rise or swing upwards when the tip-valve is opened, by operating or moving the top of the regulator, and a quantity of gas is introduced through the induction-pipe E into the regulator, which raises this movable top, as well as supplies the burners which are attached to the eduction-pipe or tube, until the tip-valve is closed by the projections on the inside of the top part of the regulator; as the yielding-top descends by exhausting the gas by the burners, it again opens the tip valve and allows another quantity of gas to be introduced, and so on.

*Claim.*—The tip-valve K, in combination with the movable top or float F of the regulator, for operating the tip valve by means of the projections M M, or otherwise, essentially in the manner and for the purposes set forth.

Also, the use and application of oil and water, or other liquid on which oil will float, for the packing required in the gas-regulator, essentially in the manner and for the purposes fully set forth in the specification.

No. 13,020.—HIRAM WHEELOCK.—*Improvement in Gas-Regulators.*—  
Patented June 5, 1855. (Plates, p. 109.)

The filter-regulator B is formed by two flat circular perforated heads 3, connected by a small rod 3 through their centres, adjustable by a thumb-screw *d*. The packing *p* consists of any elastic fibrous material.

*Claim.*—The use of textile or fibrous substances, for packing the chamber of a gas-regulator, constructed and arranged as set forth.

No. 13,210.—SAMUEL W. BROWN.—*Improvement in Gas-Regulators.*—  
Patented July 10, 1855. (Plates, p. 109.)

The nature of this improvement will be understood from the claim and engraving.

I *claim* the described lever F and valve E, and the knife-edged guides or points of support P O and L L, for sustaining and guiding the lever F and valve E, and the floats H, which are so arranged and operating by the pressure of gas within the float H as to apply great force to open the regulating-valve, to overcome the sticking or adhesion of this valve to the top of the induction tube B, by the gas-tar, and then to continue to open or close it in proportion to the number of lights which are being regulated, and the pressure of the gas through the induction tube B, so as to regulate the burners nicely and evenly, essentially in the manner and for the purposes set forth.

No. 13,377.—SAMUEL W. BROWN.—*Improvement in Gas-Regulators.*—  
Patented August 7, 1855. (Plates, p. 110.)

The pressure of the gas into the regulator, and the exhausting of the gas by the burners, cause the valve-seat of quicksilver to rise so as to bring it in contact with the end of the induction tube D, and close it; and so it remains in until the top C is depressed far enough to separate the quicksilver from the end of the tube D, thereby opening it, and allowing a fresh supply of gas to enter, and so on during its operation.

*Claim.*—Constructing and attaching a quicksilver cup F, or its mechanical equivalent, within the inside of the float, through which the gas passes on its way to the burners, in combination with the induction tube D, or its mechanical equivalent, for the purpose of constituting a self-acting valve or valve-seat, to evenly regulate the flow of the gas, essentially in the manner and for the purposes set forth.

No. 13,437.—STEPHEN P RUGGLES.—*Improvement in Gas-Regulators.*—  
Patented August 14, 1855. (Plates, p. 110.)

In the chamber *b* is placed a floating valve *c*, made of a thin metallic disc, fitting loosely in the chamber; when the flow of gas is shut off, it drops on to its seat; when the head of gas is let on, it raises the valve slightly from its seat, and the gas flows underneath it to the inner pe-

rimeter of chamber *b*, and thence to the burner. The floating of the valve over the current of gas is intended to regulate the quantity of gas escaping to the burner.

The inventor says: I am aware that a disc valve, without an opening in itself, but in connexion with side openings both above and below it, has been used, and that a valve with an opening has been used; but in neither case is the valve the regulator of the entire flow. These I do not claim.

But I *claim*, in combination with a gas-burner, a floating valve, which stands across and controls the flow of gas through the gas-way, substantially in the manner and for the purpose set forth.

No. 13,700.—JULIUS C. DICKEY—*Improvement in Gas-Regulators*.—Patented October 23, 1855. (Plates, p. 110.)

This gas-regulator is open at one end, to receive the screw of the gas-pipe, and has the other end perforated with holes, to admit the gas, and made so that the gas-pipe may be screwed on to the end of the same. To the perforated end, at the inner side of the tube, is applied a valve, with a valve-rod, to which valve-rod is secured, on the outside of the tube, a spiral spring, by means of a nut on the end of the rod, the spring and nut serving to keep the valve in its proper position.

*Claim.*—The valve-chamber B, cast in one piece, with the perforated plate I, in combination with the adjustment of the valve placed outside, as described, and for the purposes set forth.

No. 12,597.—JOSEPH S. KIRK and WILLIAM H. ELLIOT.—*Improved Grate-Bar*.—Patented March 27, 1855. (Plates, p. 110.)

D, suspension-rod; B, detachable wearing parts, which, when worn away, can be replaced by new ones.

*Claim.*—The employment of a suspension-rod for the support of the grate-bar, arranged as described, or its equivalent. The constructing of the wearing and supporting parts, as described, separately, so that said wearing parts may readily be removed and replaced, for the purposes set forth.

No. 13,669.—SAMUEL VANSYCKEL—*Improvement in Interlocking Grate-Bars*.—Patented October 9, 1855. (Plates, p. 110.)

The nature of this improvement will be understood from the claim and engravings.

*Claim.*—So casting grate-bars, with projections and recesses on their sides and ends, as that, when laid together, they shall interlock, one over, under, or behind the other, in such manner as to prevent them moving vertically or horizontally, or from warping, whilst they may be readily removed or replaced, as set forth.



No. 14,007.—CHARLES EVANS, assignor to HIMSELF and GEORGE K. GOODWIN.—*Improvement in Revolving Grates*.—Patented December 25, 1855. (Plates, p. 110.)

In the accompanying drawings A is the fire-pot, which is made cylindrical, and caused to revolve within circular depressions in the side of the stove. C C' are the fire-grates, which are hinged at *a* to the circular heads of the fire-pot; the grates are kept closed upon the fire-pot by the circular recesses in which the latter revolves. From the top of these recesses the sides of the stove are cut away to enable the grate to be swung up from the fire-pot, as seen in fig. 2. This is accomplished by means of the bent lever D, having a handle projecting outside of the stove, which enters beneath the pin *b* upon one end of the grate; by turning this lever, the grate is thrown into the position seen at C', fig. 2, in which position it may form the front grate of the stove.

I *claim* the method described of hanging the cylinder within the recesses in the sides of the stove, and of raising the grate to its upright position, as set forth.

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No. 12,239.—MICHAEL B. DYOTT.—*Improvement in Lamp-Shades*.—Patented January 16, 1855. (Plates, p. 110.)

The arrangement of the metallic shield B, in combination with the free space between the shield and the shade, (which rests on the wires C,) protects the shade from being scorched or burned.

*Claim*.—The arrangement of the shade A, shield B, and wires or their equivalent C, with the intervening space, substantially as described, for the protection of the shade, as specified.

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No. 12,394.—JOSIAH H. NOYES.—*Improvement in Lamp-Extinguishers*.—Patented February 13, 1855. (Plates, p. 110.)

*Claim*.—Attaching the caps or extinguishers to the wick-tubes of a lamp by means of rods secured to the said wick-tubes, and in such a manner that the caps may be freely moved up and down the said rods, and applied to or removed from the top of the wick-tubes, as set forth. (See engraving.)

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No. 12,520.—FREDERICK C. RIDER.—*Improvement in Lamps*—Patented March 14, 1855. (Plates, p. 110.)

This improvement consists in having a short tube H on the inside of the wick-tube G; so that by adjusting the height of the tube by the screw J, the volume of the flame may be increased or diminished. *b* is the wick.

*Claim*.—The use of the regulator-tube H, arranged and operated as set forth, in combination with the wick and wick-holder, as applied to the inner surface of the wick, to regulate and control the flame of the wick, substantially as set forth.

No. 12,550.—ELBRIDGE HARRIS.—*Improvement in Lamps*.—Patented March 21, 1855. (Plates, p. 110.)

B is the metallic reservoir within the glass lamp A; F is the protector. The reservoir B is surrounded by ornamented paper, which shows through the glass surrounding the paper.

*Claim*.—Using within glass lamps of any form reservoirs of metal, which are provided with the usual tubes for burning common oils, or adapted by means of protectors to burn any fluid combustible.

Also, the mode of ornamenting such reservoirs, contained within glass, by means of paper with metal or ornamental surfaces.

No. 12,646.—CHAS. WILHELM and ANNA CATHERINE WILHELM.—*Improved Protector for Lamp-Shades*.—Patented April 3, 1855. (Plates, p. 110.)

g are the sections of mica, (or a whole piece of mica,) secured between the rings f.

The inventors say: We are aware that a patent has been granted to M. B. Dyott for a lamp-shade frame made of metal, in which he claims the arrangement of the shade, shield, and wires, or their equivalents, with the intervening space, substantially as described, for the protection of the shade. This we do not claim.

We *claim* the introduction of mica as a transparent non-conducting material between the shade and the frame, for the purpose of preventing the shade from taking fire or being otherwise injured, whilst the light is free to be reflected, as though there were nothing interposed between them, substantially as described.

No. 12,814.—DEXTER H. CHAMBERLAIN.—*Improvement in Lamps for Burning Fluid*.—Patented May 8, 1855. (Plates, p. 110.)

The body of the lamp is filled with granulated pumice-stone, which absorbs the fluid within its pores, and also discharges it freely as it is required to feed the flame. By this means the danger of explosion is to be prevented.

*Claim*.—The employment of granulated pumice-stone as a packing for spirit-lamps and other vessels containing any inflammable hydro-carbon, in the manner and for the purpose substantially as herein set forth.

No. 13,170.—JAMES D. HAYS.—*Improvement in Lard Lamps*.—Patented July 3, 1855. (Plates, p. 110.)

*Claim*.—The combination of the cylindrical chamber B, piston E, and the valve D at the lower end of the wick-tube C, whereby the lard is retained in the wick-tube, when the piston is moved back to refill the chamber B.

No. 13,259.—FRANCIS BLAKE.—*Improved Rosin-Oil Lamp*.—Patented July 17, 1855. (Plates, p. 111.)

The air enters at *a* (see arrows), and passes through *F* into *G*, and through *H* and through *K* to the flame. By turning the sleeve *T* the pin *g* (which passes through the inclined slots *f* and through vertical slots in the sleeve) will elevate or depress the rod *M* and the buttons *L* and *I*, thereby lessening or increasing the draught.

The bowl-shaped regulator *N* works up and down, to and from the body of the lamp, upon screw *o*; between this regulator and the lamp is enclosed an air-chamber *P*, which communicates with the external air by opening *b*, and with the passage *Q* by opening *c*. By raising or lowering *N*, the openings *b* and *c* will be diminished or increased, for the purpose of regulating the amount of air supplied to the outside of the wick.

*Claim*.—1st. The air-chamber *G*, within the lamp, in connection with the circuitous passage *F*, for the purpose set forth.

2d. The button *I* in combination with the button *L* and opening *H*, whereby the quantity of air that is admitted to the interior of the flame is adjusted to the height of the button above the wick, as described.

3d. The draught regulator *N*, constructed in the manner substantially as set forth.

No. 13,537.—SALMON BIDWELL.—*Improved Locomotive-Lamp Case*.—Patented September 4, 1855. (Plates, p. 111.)

This invention consists in arranging that portion of the chimney above the burner of a lamp (for locomotive engines), so as that the external orifice of the chimney may be back of the lamp-case on either side of a line drawn from the burner of the lamp directly backward therefrom, for the purpose of bringing the external orifice of the chimney into one or both of the currents of air formed on either side of the smoke-stack and lamp-case, so as to prevent the eddy formed immediately in front of the smoke-stack from extinguishing the lamp by checking the draught. *G* represents the glass or front of the lamp-case. *H H* are the orifices for the escape of the smoke into the open air.

I claim the placing of the chimney horizontally, and in such a position as to discharge the smoke near the top and behind the lamp, as described.

No. 13,674.—JOHN G. WEBB.—*Improvement in Argand Lamps*.—Patented October 9, 1855. (Plates, p. 111.)

This invention consists in applying a button a little above the air-tube *b*, in combination with the ordinary button and with the external draught, so that the opening between the air-tube and the said button is as near or may be of the same width as the external draught between the button and the wick; by which means the air is compressed or thrown on to the base of the flame at opposite and equal angles, and with uniform force on each side of the flame, rendering the combustion more uniform.

*Claim.*—The arrangement of the button *b* and deflector or button *g*, as described and shown, when used in combination with the draught spaces *i* and *l*, on each side of the burner or flame, having the relative proportions set forth, and for the purposes as specified.

No. 13,675.—J. S. BROWN, assignor to Jos. KENT.—*Improvement in Lard Lamps.*—Patented October 9, 1855. (Plates, p. 111.)

When the lamp is to be filled, the inverted cup is drawn straight out and the piston *D* screwed down to the bottom of the bowl *A*. A notch in the top of screw *m* will enable this to be done with a screw-driver. The lard is put either in the bowl *A* or cup *C*, which is then replaced. If the piston should fail to hold the lard in the cup *C*, it will only run down into bowl *A*, and there be held, by which means is insured perfect cleanliness. The top of the cup *C* is double, with a space *H* between the two covers, and a tube *d* through for the passage of the lard to the wick *g*. To prevent the cup *C* itself being lifted as the screw is turned, instead of the piston therein, a bead *a* is formed in the upper part of bowl *A*, into which arms *c* extend, jointed to cup *C*. By turning the cup sufficiently to withdraw the arms from their radial position and out of the bead, the cup is left free to be lifted off. The lower edge *h* of the cup is sharp, so that it will fit pretty closely, but not tightly, in bowl *A*.

*Claim.*—The combination and arrangement of the open bowl *A* with its hollow support *B*; the inverted cup *C*, with its air-space *H* and enlarged mouth *h*, and the piston *D*, constructed and operating substantially in the manner and for the purposes set forth.

No. 13,723.—JOHN STUBER and THOMAS HARDIN.—*Improvement in Lamps.*—Patented October 30, 1855. (Plates, p. 111.)

The perpendicular portion of feeding-pipe *C* contains a rod *D* extending nearly to the bottom thereof, and filed on one side bevelling, and leaving a cavity between the rod and the outside of the pipe, largest at the bottom and growing gradually smaller, until it reaches the horizontal portion of the feed-pipe, thereby regulating the quantity of oil fed to the lamp, which may be made greater or diminished, by moving the rod up or forcing it down.

The oil escaping over the top of the wick is received in the basin *G*, and conveyed back into the oil-chamber *A* through pipe *H*.

*Claim.*—The use of tube *H*, connecting the drip-cup *G* with the reservoir *A*, in the manner described for the purpose specified. Also, the arrangement of tubes *C C* in combination with the rod *D*, in the manner described, for the purpose specified.

No. 13,729.—E. N. HORSFORD and JAMES R. NICHOLS.—*Improvement in Lamps for Burning Volatile Liquids*.—Patented October 30, 1855. (Plates, p. 111.)

The nature of this improvement will be understood from the claim and engravings.

The inventors say: We do not claim the use of perforated metal or of wire gauze, as a means of protection in these lamps.

But we *claim*: 1st. The combination of the safety-wick tube constructed as described, with the safety-tube or casing *g* around it.

2d. In combination with the safety-tube or casing, the perforated safety-chamber *f*, with its tube barbed at the top *i*, to contain and hold the wick in place.

3d. Making the wick-tube in two parts *k m*, or divisions, separable or not, substantially as set forth, so as to form the safety-chamber in which the barbed portion of the lower wick-tube terminates.

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No. 13,860.—WILLIAM BENNETT, assignor to the UNION INDIA-RUBBER LAMP COMPANY.—*Improvement in Fluid Lamps*.—Patented November 27, 1855. (Plates, p. 111.)

The elastic bag B containing the fluid will expand under the pressure of the gas, and consequently will not break; and in case the lamp should be casually broken, the bag will retain the fluid and prevent accidents.

*Claim*.—The elastic bag or receptacle B placed within the body of a lamp, or within a proper framing or support, to receive and hold the fluid, substantially as described, for the purpose specified.

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No. 13,910.—F. A. JEWETT.—*Improvement in the Mode of Attaching Extinguishers to Lamps*.—Patented December 11, 1855. (Plates, p. 111.)

The nature of this improvement will be understood from the claim and engraving.

*Claim*.—Attaching the cap or extinguisher to the lamp by means of a spiral spring *b* coiled around the wick-tube and secured at one end to the cap and at the other to the screw-plate *c*, or in any other convenient locality, whereby the cap is tightly drawn down over the wick, as described.

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No. 13,972.—ELIJAH RICHMOND, assignor to IRA NOYES.—*Improvement in Lamp Extinguishers*.—Patented December 18, 1855. (Plates, p. 111.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—Attaching to the cap or extinguisher a tube placed at any desired angle with the same, leaving a clear space between the cap

and its tube, as described, whereby the cap or extinguisher can be applied to or removed from the wick without removing the said cap-tube from the wick-tube, as set forth.

No. 12,200.—CHARLES W. FELT.—*Improvement in Entry-Lights*.—Patented January 9, 1855. (Plates, p. 112.)

To each door, *x, z, y*, (leading to entries or other rooms intended to be periodically lighted,) is attached a plate *A*, which moves with the door as it is opened or closed. The motion of either one of the doors and plates *A* is transferred (by a link connection consisting of wires and bell-joints, and by a hook *b* extending from that part of the link connection which is nearest the burner) to the toothed-wheel *B*. To the end of the axle *C* of this wheel is attached the cock *D*. The toothed wheel has eight teeth, and the cock *D* has two holes through the plug (to wit: four openings on its circumference) at right-angles to each other, and a small groove upon its circumference connecting these holes, to admit the passage of only sufficient gas for the minimum burning. The catch *I* prevents back motion of the wheel. As the shaft *C* makes one-eighth of a revolution at the opening of any of the doors, the opening of one of the doors will put the cock in the position of the minimum burning-point, and so on, alternately; the opening of the door to come in producing a full light, and the opening to go out reducing it to the minimum point.

In burning oil instead of gas, the wheel *B* is operated as above, and a four-armed wheel *E* acts upon a lever *F*, which operates a sliding-tube *f*, which loosely fits the wick-tube. The sliding of tube *f* upon the wick-tube above the top of the latter, partially cuts off its supply of air, and correspondingly reduces the intensity of the light.

The inventor says: I do not claim the cock *D*, or the link connection, those being, substantially, old; but I do *claim* the combination of the link connection with the cock *D* for gas, and the sliding-tube around the wick-tube for oil or other liquid illuminating material, in the manner and for the purpose set forth.

No. 12,291.—LEWIS HOVER.—*Improvement in Lanterns*.—Patented January 23, 1855. (Plates, p. 112.)

The base *B* is secured to the lantern or to the rim *D* by the hooks *c c*, which are kept over projection *c* by springs *d d*; and in order to detach the base the thumb is pressed upon button *F*, and the inner ends of the springs are forced inwards towards the centre of the base by the oblique position of the ledges *f f*, against which they slide, and the hooks are consequently thrown off the projection *c*.

*Claim*.—The arrangement of the springs *d d*, hooks *c c*, and ledges *f f*, operated in the manner described, as a fastening to secure the base *B* of the lantern to the other portion of the same.

No. 12,324.—ELIJAH F. PARKER.—*Improvement in Lantern Frames.*—Patented January 30, 1855. (Plates, p. 112.)

*Claim.*—Passing the guard-wires *a* of lantern-frames through suitable holes *c*, in the corners or uprights *C*, by which means soldering at such points may be dispensed with, as described. (See engraving.)

No. 13,250.—C. H. BUTTERFIELD.—*Improvement in Lanterns.*—Patented July 17, 1855. (Plates, p. 112.)

The inventor says: I do not claim any particular form of spring, nor the application of my improvement to any particular style or kind of lamp or lantern.

But I *claim* attaching a yielding or springing-plate *B* to the cap, in combination with a match holder *A*, so that lifting or throwing off the cap shall light a match placed so as to light the wick or lamp.

No. 13,286.—CHAS. WATERS.—*Improvement in Lanterns.*—Patented July 17, 1855. (Plates, p. 112.)

To the under surface of the flanch *c* there is attached a spring-catch *e*, the end of which passes through the shoulder *d*. One or more spring-catches may be used, and also two or more lips *f* permanently attached to the shoulder. The lower bead *h* of the glass-shade *E* rests upon the inner edge of flanch *c* of the band *D*, which is fitted to the lantern by means of spring-catch *e* and lips *f*, which project over the inner-edge of the annular plate *C*. The glass-shade, therefore, is secured between the lower edge of the top *A* of the lantern and the upper edge of band *D*, and is firmly secured to the lantern without the aid of plaster or cement. The shade can be detached from the lantern by merely throwing back the spring-catch *e*.

I *claim* the application of the spring-catch *e* and lips *f*, substantially as and for the purposes set forth.

No. 13,539.—C. H. BUTTERFIELD.—*Improvement in Lantern Guards.*—Patented September 11, 1855. (Plates, p. 112.)

The two rims *A* and *B* of this lamp-guard are fitted to the small part of the lantern above and below the swell of the glass, and made with joints *E* and *D*; the rims are made so as to catch when pressed together. This lamp-guard can easily be removed by releasing the catches.

Figure 2 represents a plan of the lamp-case when opened.

I *claim* making the guard movable by means of the hinges and catches, as described, or any other substantially the same.

No. 13,577.—JAMES H. KELLY.—*Improvement in Lanterns for Locomotives*.—Patented September 18, 1855; antedated June 20, 1855. (Plates, p. 112.)

This invention consists in connecting the chamber which receives the smoke from the burner with downward flues F, open at the bottom, so that the downward current over the lamp-case, produced by the bell-shape of the smoke-stack of the locomotive, will cause a steady downward draught through said flues, removing the smoke and promoting the burning of the lamp.

I disclaim the arrangement of lateral flues as applied in the lamp-case of Salmon Bidwell, also the arrangement of flues as used in the patent of J. A. Williams; my invention being an improvement on both of these.

I claim the construction of locomotive-lamp cases, with vertical descending flues open at bottom only, constructed substantially as set forth for the purposes specified.

No. 14,006.—CHARLES H. BUTTERFIELD, assignor to AMORY HOUGHTON.—*Improvement in Guards for Lanterns*.—Patented December 25, 1855. (Plates, p. 112.)

The springs A B allow the guard C to be opened apart, (after hook E has been withdrawn from eye *a*,) so that it may be sprung upon and made to embrace the neck and lower part of the lantern.

The inventor says: I do not claim making the guard movable by means of hinges and catches, or other contrivances equivalent thereto;

But I claim my improved mode of making the guard elastic, as set forth, or with springs at top and bottom to embrace the neck and lower part of the lantern, the same not only dispensing with hinges, but serving to maintain the guard in place, even when its clasp may be unhooked.

No. 12,209.—GUILLAUME LAMBERT.—*Improvement in Coke-Ovens*.—Patented January 9, 1855. (Plates, p. 112.)

When the oven B has just received a fresh charge which is ignited, and the charge in A has been for some time submitted to the coking process, the doors of A are all hermetically closed, as also are the doors at the rear end of B. The damper K is raised to open chimney F, and the damper L is lowered to close chimney G. The necessary air for the combustion of the smoke, etc., arising from the fresh charge, is allowed to enter at the doors in front of B, so that it may mix with the same and pass through the flue N to be burned in A, where a portion of the carbon is then deposited. The incombustible products of this combustion escape at a very high temperature through the flue C into chamber D, and are made to impart a portion of their heat by radiation to oven B, as they pass onwards to flue E, which leads to the chimney.

The inventor says: I do not claim combining a series of coke-ovens,



so as to be operated conjointly by the heat and volatile products of one passing to the next. Neither do I claim heating the charge by means of the escaping products of combustion passing through flues wholly or partly surrounding the ovens;

But I do *claim* the manner herein described of combining the ovens by means of flues and passages, whereby the smoke and gaseous products, generated in each during the earlier stages of the calcining process, are burned in the next, where the process is at a more advanced stage, and the whole of the products of the combustion of the combined ovens are returned under the first, or that in which the process is least advanced, to assist in heating the charge contained therein, and expedite the liberation of the volatile products.

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No. 13,375.—JNO. P. HAYES.—*Improvement in Ovens*.—Patented July 31, 1855. (Plates, p. 113.)

The nature of this improvement consists in the arrangement of hot-air flues for the purpose of increasing the ventilation and circulation of hot air; and also in adapting the plate, which usually produces a returned flue over the top of an oven, so as to be loose or movable up and down, thus yielding readily so as to allow a convenient introduction or withdrawal of the movable lining which is frequently used in cast-iron ovens, as affording more convenient access for cleaning the flue spaces around the same.

The inventor says: I do not claim arranging or combining two ovens together, the one over the other, nor a movable box fitting within the same and forming the inner lining of an oven; as these have been known and used before.

Nor do I claim causing the hot air of one oven to pass into the other; nor the application of a partition plate so as to divide the space above the movable lining-box into direct and returned flues; nor the combination of direct and dumb flues for heating the ovens; nor ventilating and producing a circulation of hot air within an oven irrespective of the peculiar construction, arrangements, or combinations of the several devices, as specified;

But, 1st, I *claim* the pipes or hot-air flues P P extending up one or more of the heating flues of an oven, the same opening into the oven near both the top and bottom of the same, so as to form a communication between the upper and lower strata of air in the said oven, through the gas flue or flues in which they are located, and the said flues P P opening also near the bottom of the same to the outside of the said oven, for the purpose of admitting fresh air into the said oven, substantially in the manner as described and set forth.

2d. I claim making the partition-plate K so as to move or yield upward, substantially as described and set forth, when the same is used in combination with the movable box or lining *d* of an oven, for the purpose of allowing the ready admission or withdrawal of the said movable box as occasion may require.

No. 13,855.—JEAN LOUIS ROLLAND.—*Improvement in Ovens for Baking Bread and other Aliments*.—Patented November 27, 1855. (Plates, p. 113.)

The products of combustion, as they leave the grate E, pass by the flues G, through chamber I, beneath the oven floor, and thence through the vertical conduits *k* into air-chamber L and to the chimney M. The baking floor N being revolved upon axis *o*, all its parts are equally exposed to the action of the heat proceeding from the flues G.

*Claim*.—The arrangement of the horizontal flues G within the hot-air chamber I and beneath the baking-floor N, operating in the manner substantially as set forth.

No. 13,717.—JULIUS FINK.—*Improvement in Cooking-Ranges and Air-Heaters*.—Patented October 30, 1855. (Plates, p. 113.)

The cold air enters the hot-air chamber N, and when heated ascends by its rarefaction up through pipe C and out into the apartment. The chamber U above the dust-box T is common to the gas-flue passing around the oven B B and to the dust-box, as may be required, by means of single damper *d*, so hung that by closing the gas passage it will open the passage into the dust-box, and *vice versa*. When the grate is to be raked, the damper *d* is turned up, closing the gas passage and opening the passage into the dust-box. The draught through the stove being cut off, the ashes will ascend through the pipe D but a short distance, and will then fall back into the dust-box, whence they are readily removed. After the heated gases pass around the ovens, they enter pipe D, which is located within the hot-air chamber, where it becomes highly heated, and imparting its heat to pipe D, it reheats the gases within D, causing them to ascend with greater rapidity, and thus increases the draught.

The direction of the smoke and heated gases is indicated by arrows in full lines, the direction of the heated air by dotted arrows.

*Claim*.—The arrangement of the dust-box T and exit flue U, leading from the passages surrounding the oven, within the air-heating chamber, substantially as described, and for the purpose specified.

Also, in combination with a hot-air chamber, which is heated by conduction and independent of the heated or burning gases which pass around the oven, the carrying of said gases back and up through a flue located in said hot-air chamber, for the purpose of re-heating the gases and causing them to ascend more rapidly by their rarefaction, substantially as described.

No. 13,802.—D. W. C. SANFORD.—*Improvement in Refrigerators*.—Patented Nov. 13, 1855. (Plates, p. 113.)

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I am aware that various modes have been tried and used for circulating air in refrigerators; but I am not aware that

in any instance a complete and continued rotation, purification, dessication, and refrigeration of the whole of the contained air of the refrigerator has been compelled, as it is in my invention.

I *claim* the arrangement set forth, for causing the perpetual rotation of the whole of the air contained within the refrigerating apartments; said arrangements consisting, when the refrigerator is closed, of an endless passage or chamber, the walls, shelves, and ice-receptacle of which are so placed and constructed that the air is compelled to circulate through the entire apartment or apartments, and from which the water of the melting ice is discharged immediately from the refrigerator, instead of flowing between its walls, the whole being constructed as set forth.

No. 12,882.—DAVID WEISER.—*Improved Composition for Filling-in Fire-proof Safes.*—Patented May 15, 1855.

The composition consists of about three parts of paper-stuff reduced to a pulp, about twenty-four parts of well-sifted ashes, nine parts of clay, and as much water-glass and salt water as will form a plastic paste.

*Claim.*—The employment and use of the composition of matter, substantially as hereinbefore set forth, as a fire-proof filling or lining for fire-proof safes, or other rooms, compartments, or places required to be made fireproof.

No. 13,639.—CHARLES DAVENPORT.—*Improved Apparatus for Heating Buildings by Steam.*—Patented October 9, 1855. (Plates, p. 113.)

The steam from the boiler flows into pipe K, and from thence into radiator I, where its heat will be abstracted by the metallic surfaces thereof, the condensed steam flowing down pipe R into vessel M. As the boiler, by means of pipe Q, communicates with vessel M, water will stand at the same level in the boiler and said vessel as well as in cistern L, provided the boiler is not making steam. But while steam is being formed, its pressure on the surface of the water in the boiler will have a tendency to force water into vessel M, and thereby raise the water thereof above such level. While the water in M is above such level, the valve O of pipe N will remain closed, in consequence of the extra pressure upon it; but whenever the water falls below the level of the water in the cistern, such valve will be forced open, and water will flow from the cistern into vessel M, and from thence through the pipe Q into the boiler. While the column of water in the vessel M remains above the level of the water in the boiler, it serves to force the steam through pipe K, and to maintain its circulation through the radiator—the vessel M thus serving to regulate the circulation of the steam, and at the same time close the valve O. Should the water in the boiler fall below the top of the mouth of pipe P, steam will rush through said pipe and into M, and be discharged through alarm-whistle T, when the combustion of fuel has to be arrested.

The inventor says: I do not claim a boiler, radiator, and supply-

cistern, so connected by pipes that the steam from the boiler may be made to circulate through the radiator, and from thence pass in a condensed state back to the boiler.

But I *claim* the arrangement of the vessel M and its connecting-pipes Q N P, and valve O, the supply-cistern L, the boiler A, the radiator I, and the leading steam and return-pipes K and R of the said boiler and radiator, the whole being made to operate together, substantially in the manner and for the purpose specified.

No. 13,654.—A. S. PELTON.—*Improvement in Radiators of Steam-Heating Apparatus*.—Patented October 9, 1855. (Plates, p. 113.)

The floating-valve *m* is placed in a chamber R in the bottom of the radiator, which valve, when there is a collection of water from condensed steam, will be raised until the water is discharged, when the float will fall and close the discharge-opening (underneath chamber R) before the steam is permitted to escape. *n* is the escape-valve. The porous-packing *w* serves to suppress the noise of the escaping steam, and yet permits the steam being forced through the same.

*Claim*.—The arrangement, substantially as specified, in a chamber exterior to the escape-valve of a porous-packing *w*, for preventing noise during the escape of steam from the heater, as set forth.

Also, the employment of the float-valve *m* in connection with the heater and pipes leading to the boiler, as specified, to prevent the accumulation of condensed steam.

No. 13,842.—PLINY E. CHASE.—*Improvement in Steam-Heating Apparatus*.—Patented November 27, 1855. (Plates, p. 113.)

B represents part of the fire place underneath the boiler A. The water in the boiler A being raised to a temperature making steam, the steam in the boiler will expand, gradually increasing its pressure upon the water in the steam-bell E, and causing the water of the regulating tank O surrounding the bell to rise to a level the height of which is proportioned to the pressure inside the bell. When the tension of the steam is such as to raise the level of the water to the dotted line *i i*, the supply of air to the fire-chamber is intercepted, and the fire is consequently slackened; should the pressure of the steam be still increasing, the water of the tank O is forced to run over the partition I into pipe *d*, and there it is mixed with the water contained in the boiler, reducing the temperature of the latter. There is another supply of water to the boiler, arising from the condensation of steam in pipe *c* and globe D. If the head of steam becomes too powerful, notwithstanding the check of draught as above described, the water in the bell will be pressed below the level of its edges, and the steam will escape from E into flue G, which will check the combustion of fuel.

*Claim*.—The peculiar arrangement of the pipes *c* and *d*, the draught-pipe G, and the tanks O and C, in combination with the steam-chamber E, in the manner described and for the purpose specified.

No. 12,382.—JAMES EASTERLY.—*Improved Magazine Smoke-Consuming Stove*.—Patented February 13, 1855. (Plates, p. 113.)

The inventor says : I do not claim the use of a fuel magazine M, nor of a downward draught for the fire, neither being novel arrangements in stoves.

But I *claim* the constructing a stove as described, with openings a for the admission of air to the burning fuel E, at some point or points above the grate G, including between said points and the grate sufficient fuel for ignition at any one time.

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No. 12,434.—JAMES B. BLAKE.—*Improvement in Gas Cooking-Stoves*.—Patented February 27, 1855. (Plates, p. 114.)

A is the oven ; B the shell or double case which surrounds the oven, and which is packed with a non-conducting substance ; a the burners ; b the opening for the admission of air ; C space between the oven and case B, in which space C the gases are retained until partially cooled, when they descend and pass off through f.

*Claim*.—The described method of heating the oven of a gas cooking-stove, the oven being surrounded by a flue or chamber having an opening in one end for the admission of air, for the combustion of the gas which is burned immediately beneath the oven, and openings in the bottom for the escape of the products of combustion, the latter being retained in contact with the oven until sufficiently cooled to descend and pass off, in the manner set forth.

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No. 12,474.—J. J. ANDERSON.—*Improvement in Cook-Stoves*.—Patented March 6, 1855. (Plates, p. 114.)

The ellipsoidal oven gives an even degree of heat from all parts of its surface, thereby rendering the baking qualities of this stove equal to those of the oval brick oven. The construction of the fire-back favors durability and strength, and the arrangement of the ash-box allows it to be readily removed for cleaning the return flue I.

*Claim*.—The construction of the ellipsoidal oven O in stoves, as set forth, arranged in contact at the front with the horizontally corrugated fire-back M, and detachable ash-box P.

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No. 12,639.—THOS. MOORE.—*Improved Stove-Pipe Tube*.—Patented April 3, 1855. (Plates, p. 114.)

The inner tube d is of sheet-iron, the outer d<sup>1</sup> of sheet-zinc. One end of each of these tubes is fastened to heads c, the outer surface of which heads is somewhat convex ; so that when applied to a partition, only the edges of the heads will come in contact with the same. The tubes are so adjusted that they can be connected by inserting the end of one into that of the other, and when thus connected will admit of a

free circulation of air in the space between the two tubes by means of opposite apertures in either head.

*Claim.*—The double and adjustable concentric tubes, or stove-pipe thimbles, constructed in the manner described, for the purposes set forth.

No. 12,741.—ANDREW MAYER.—*Improvement in Gas Cooking-Stoves.*—Patented April 17, 1855. (Plates, p. 114.)

The article to be roasted or baked is placed on a plate *o* in the oven A, the plate forming the bottom of the oven. The air heated by passing around and through the burner or burners C enters, through the perforated plates *a* above the burners, the hot-air chambers B B, (one on either side of the oven,) the hinged covers *e* of which may be opened to any desired degree to allow of its escape. The oven is heated by radiation from the bottom and sides and also from the roof, and by the heated air escaping into the other part. The heated air may also be admitted through openings *p p* by removing slides *n n*. If the covers *e* are closed, all the heat passes then through the openings *p p* and *d d*, thereby exposing the bottom side of plate *o* to the greatest heat.

The inventor says: I do not claim as new in stoves, separately considered, the several parts or devices specified;

But I do *claim* the arrangement herein shown and described, of the gas lamps or burners with their overhanging perforated plates or openings, side apertures or passages for distribution of the heat, oven and hot-air chambers or boxes, situated at the sides of the oven within the body of the stove and provided with lids and side valves, as set forth, and for the purposes specified.

No. 12,753.—J. JOHNSON and J. E. CRANE.—*Improvement in Stoves, &c.*—Patented April 24, 1855. (Plates, p. 114.)

The object of this invention is to prevent counter currents of air (which frequently occur, owing to the low temperature of the air in the room, caused by opening of doors, windows, &c.) from throwing the heated air down into the cold-air passage, where it is apt to ignite the adjacent wood-work.

The cold air passes through pipe F into water-tank G, thereby opening valve H. The water is warmed by the heat from the stove, and the air becomes moistened by the gradual evaporation of the water. The air, passing up through the central passage L, becomes thoroughly heated. In case of a counter current passing down the passage L, the valve L will be closed thereby, and the counter current will be prevented from passing through the cold-air pipe F. The bridge I prevents the air from getting under the valve, and forcing it open instead of closing it.

The inventors say: We do not claim the central air-heating passage L separately, for that has been previously used;

But we do *claim* the employment of the valve H, in combination

with the bridge I, arranged in the manner described, for the purpose specified.

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No. 12,913.—CHARLES B. LOVELESS.—*Improved Air-Heating Cook Stove*.—Patented May 22, 1855. (Plates, p. 114.)

The nature of this improvement will be understood from the claim and engravings.

The arrows in full lines indicate the course of the smoke, and the dotted arrows that of the air.

The inventor says: I do not claim the arranging of a narrow hot-air chamber in rear of an oven, so that the flues which conduct the smoke to the rear part of the oven shall also come into contact with one or both of the opposite sides of the said hot-air chamber; nor do I claim the combination of hot-air fixtures or flues with the heating and culinary apparatus of a cooking range or stove, because such a combination is well known, and has been used for many years; nor do I claim merely arranging hot-air flues, smoke-flues, and one or two ovens, so that the smoke, while passing in contact with the hot-air pipes or flues, may also pass against the three or four sides only of either one or both ovens;

But I do *claim* the improved arrangement of one continuous smoke-flue around an oven, and against hot-air flues arranged as described, whereby not only are the hot-air flues and four sides of the oven subjected to exposure to the heat of the smoke while coursing through such continuous flue, but the end of the oven and the end of the vertical hot-air chamber G are also exposed to be so heated; this invention being an important and useful improvement on the general combination and arrangements of hot-air and culinary fixtures, herein referred to and described.

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No. 13,113.—ALVA WORDEN.—*Improvement in Joints for Store-Pipes*.—Patented June 19, 1855. (Plates, p. 114.)

To the ends of the pipes there is attached a half-circle tapering tubular screw, cut or swedged on separate connecting pieces or on the ends of the joints of the pipe. The same being double and tapering, the connecting ends enter loosely, and by a half turn of the pipe the joint is tightly closed and remains firmly joined; and at the same time the screw connecting by means of a half-circle, and being of a tapering form, it is readily loosened, and disconnected by a slight turn backwards.

*Claim.*—The inclined tapering semicircular grooves, constructed in the manner and for the purpose specified, all of which are fully demonstrated.

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No. 13,194.—ROBT. WILSON.—*Improvement in Stores*.—Patented July 3, 1855. (Plates, p. 114.)

Three or more cylinders are supported one above the other, by being riveted to a plate at each end, or by means of two twisted rods l. To

save wear there is used a loose roll of sheet-metal *g* within cylinder *a*. The upper cylinders *b* and *c* have cylinders *h h* within themselves; the spaces between *b* and *h* and *c* and *h* serving for the passage of the smoke. These inner cylinders can be used for baking, or, by opening the doors at each end, the hot air will be freely admitted to the room.

*Claim.*—The combined cylinder, stove, and oven, connected and supported as described, and lined with removable rolls of sheet-iron, for the purpose specified.

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No. 13,314.—FRANCIS KENNEY.—*Improvement in Parlor Stoves.*—Patented July 24, 1855. (Plates, p. 115.)

When a direct draught is required the damper *q* is opened, and the dotted arrows 2 show the direction of the draught. When *q* is closed the arrows 3 show the direction of the draught, which passes down the pipes *M* into chamber *H*, and thence through the openings (regulated by the position of dampers *u u*) into the lower part of and up through pipe *I* into smoke-pipe *J*. The cold air (arrows 4) passes through passage *f* into the apartments at the ends of base *E* around pipes *M*, where it becomes heated and passes into the apartment through register *z*. Cold air passes up the tubes *N* (arrows 5) and becomes highly heated before coming in contact with the gases from the fire.

*Claim.*—The arrangement of the pipes *M*, tubes *N*, chamber *H*, and pipe *I*, when provided with the dampers *u u q r*, specially as shown and set forth.

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No. 13,589.—JNO. VAN.—*Improvement in Cooking-Stoves.*—Patented September 18, 1855. (Plates, p. 115.)

*A* is a cylindrical water-vessel divided into chambers by transverse partition *s*; *f* concentric cylinder for containing the fire, provided with a suitable grate (not shown in the engraving). The opening through the top of the water-cylinder allows the heat and smoke to pass up from the fire-cylinder into a heating space at the top of the stove. This opening is crossed from side to side by tubes *d*, which form a free communication between the two sides of the water-chambers for the passage of water, and, being surrounded by the flame, causes the water in them to be heated very rapidly. The object of having separate water-chambers is for each to contain water for different uses.

*Claim.*—Arranging of the water-cylinder, with separate chambers, fire-cylinder, or space in its centre, opening through its top, and cross heating-tubes, combined and operating substantially in the manner and for the purposes set forth.

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No. 13,728.—WM. MOOTRY.—*Improvement in Stoves.*—Patented October 30, 1855. (Plates, p. 115.)

The space between the cylinders *A D* is filled with wire-work. The wire-work being heated by contiguity to the fire, currents of air pass



in at the bottom (see lower arrows), thence through the meshes, where they become heated, and out at the open top (see upper arrows).

The inventor says: I expressly disclaim any metallic packing that does not contemplate regular cellular tissues. I especially disclaim the use of spiral metallic scraps. I *claim* the application and employment of iron-work or other regular metallic cellular interstices, combined with stoves, furnaces, and other heating and cooking apparatus, or such heated surfaces generally; when used in the manner substantially and for the uses and purposes before mentioned.

No. 13,868.—JOHN A. ELDER and WM. J. THORN.—*Improvement in the Arrangement of Flues and Dumpers of Cooking-Apparatus*.—Patented December 4, 1855. (Plates, p. 115.)

By closing the dampers 5, 10, and 18, the products of combustion pass through the openings uncovered by withdrawing the damper 4 in wall 8 (see arrow 12), thence through flue 15 into chamber 16 and to the chimney 6. If it is too warm, damper S is to be closed, and damper 10 to be opened, when the heat will pass directly from chamber 16 to chimney 6. When the heat is not necessary around the oven, damper 5 should be also opened. When the oven is too hot, the draught of the fire-box is to be closed, and damper R to be opened, when the cold air will pass from the room into 14, and thence over or under the oven by operating the proper dampers.

The dampers R and S regulate the communication between the air in the room and the spaces 14 and 16. O is the oven; P the stove.

*Claim*.—The arrangement of the dampers 4, 5, 10, 18, and R S, in combination with the oven-flues 14, 15, and 16, in the manner substantially as described, for regulating and controlling the heat, for the purposes specified.

No. 13,971.—JOSEPH B. LANCASTER, administrator of JOHN K. LANCASTER, deceased.—*Improvement in Cooking-Stoves*.—Patented December 18, 1855. (Plates, p. 115.)

A steam-space F is formed around the oven A, and around the fire-chamber D<sup>1</sup> a water-space G, (for the production of steam,) which communicates with the steam-space by means of pipe b. Surrounding the entire outer surface of the water and steam-spaces G F is a space H I for receiving charcoal or a similar substance, to prevent the radiation of the heat, and thus render the stove non-conducting.

The inventor says: I am aware that the space around a portable bake-oven, heated by hot air, has been divided in a manner to form two chambers; the outer one of which served for non-conducting material, and the inner one for the circulation of hot air.

Also, that steam has been employed for the purpose of cooking, being generated by means of a cylindrical casing to the fire-pot. I therefore,

I only *claim*, as the invention of the deceased, the arrangement of parts as described and shown for the purpose set forth.

No. 12,306.—B. F. BABBITT.—*Car-Ventilator*.—Patented January 30, 1855. (Plates, p. 115.)

Fig. 1 is a section of a ventilator; fig. 2, a cross section of a car containing the ventilator. Fig. 2 is drawn on a smaller scale than fig. 1.

*Claim.*—The arrangement of a wind-wheel B, as described in connexion with a wire gauze disk or screen F, revolving in a tank of water E; the air passing through the said disk previous to entering the car, in the manner and for the purpose set forth. (See engraving.)

No. 12,534.—ISAAC P. TRIMBLE.—*Improved Apparatus for Operating Ventilators*.—Patented March 14, 1855. (Plates, p. 115.)

$a^1 a^2$  are the metal bars which, by their contraction or expansion, operate the valve R.

The inventor says: I do not claim effecting the ventilation of buildings, &c., by operating the valves to the vents or air-passages by the force derived from the expansion of metal, as this has been before proposed;

But I *claim* having the valves or ventilating-doors connected to the said metal bands about midway between their fixed supports, so that the varying degrees of flexure shall effect the operation of opening or closing said doors in the manner and for the purpose described and shown.

No. 12,541.—V. P. CORBETT.—*Method of Self-Ventilation for Railroad Cars*.—Patented March 21, 1855. (Plates, p. 115.)

*Claim.*—Forming a series of ventilating holes C C C C in the sides of the car, between the ceiling and the windows B B B B, and providing in said holes vertical ventilating fans D D D D, which are arranged so as to be caused to revolve by the rapid movement of the car through the atmosphere, and thus made to exhaust the impure air from the inside of the car. (See engravings.)

No. 12,818.—D. H. FOX and JNO. FINK.—*Improvement in Railroad-Car Ventilators*.—Patented May 8, 1855. (Plates, p. 115.)

The inventors say: We are aware that air has been passed through water and injected into railroad cars; such, therefore, we do not claim. Neither do we claim the mere employment of suction to produce a current.

But we do *claim* the construction in or on the top of the car of a long shallow chamber  $a$ , communicating at several points  $b$  with the interior of the car, and by a tube  $c$  with a fan chamber  $b^1$  beneath the car, whereby the partial exhaust created in said chamber by the running of the car produces a number of upward currents simultaneously in various parts of the car, sufficient to carry off the vitiated air and dust from the same, as hereinbefore set forth.

No. 12,827.—WILLIAM PAULI.—*Improvement in Ventilating Railroad Cars*.—Patented May 8, 1855. (Plates, p. 115.)

The draught created by means of the hood upon the roof of the car carries the air into the car, wherefrom it escapes between the usual sashes *b* and the stationary glazed frame *F*. The upward current of the escaping air is intended to prevent the entrance of dust, etc.

*Claim*.—The arrangement of guard-sash *F F* on the sides of the cars, in connection with descending tubes *D D* and hood *C* upon the top thereof, by which the dust is prevented from entering a window when opened, while the exit of the air and ventilation of the car is not affected by said guard-sash, substantially in the manner described.

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No. 12,851.—JOB R. BARRY.—*Improved Ventilating and Cooling Apparatus*.—Patented May 15, 1855. (Plates, p. 116.)

The air passes from the revolving fan *A* through the wheels *B C*, which revolve to about one-fourth of their diameter in water tanks *M N*. Thus the air comes in contact with a large amount of wet and cold surfaces on the wheels, and its temperature is reduced to nearly that of the water in the tank. From these refrigerating wheels the air passes through the ice in the box *D*, and then through the passages *G* and *F* up into the car.

The inventor says: I do not claim the devices herein described for excluding dust from railroad cars, separately, nor do I claim the passing air through an ice reservoir for the purpose of cooling the same previous to its introduction to an apartment;

But I do *claim* the arrangement of a fan and one or more refrigerating wheels, or their equivalent, with the water-tanks, ice reservoir, and return air flue, substantially as described, for securing effectual ventilation and cooling the air, in the manner and for the purposes herein set forth.

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No. 12,992.—ERNEST BAHR.—*Improved Ship-Ventilator*.—Patented June 5, 1855. (Plates, p. 116.)

This improvement is intended to prevent water from entering the vessel through the ventilator. If the water is forced up in the end *D*, it will probably close valve *d*; or if any escapes through, it will be checked by the guard-plate *e*. The same effect will be obtained by the water entering the end *E*, the guard-plate *h* and valve *i* obstructing its entrance into tube *a*; but still, if it should pass up the vertical portion of tube *a*, there are two valves *n n* to prevent its entrance into tube *E*, and the water will flow back through side apertures *r* into tube *a*. The same obstruction is presented to the water by the valves *o* and *p*. The end *E* is turned by hand so as to face the wind.

I *claim* the helical tube *A*, provided with valves *i d n o p* and guard-plates as shown; one end of the helix terminating above the deck *C* in two parts *D E*, the part *E* being provided with a wire wheel *g* and wire cloth covering *p*, said part *E* being movable, so that it may be turned to face the wind at all times, for the purpose as set forth.

No. 13,204.—CHAS. ATWOOD.—*Improvement in Ventilating Railroad Cars.*—Patented July 10, 1855. (Plates, p. 116.)

The current of air is received into the passages C (open in front) at the sides of the tender, and passes through the flexible connection between tender and baggage car along an air passage on top of the baggage car, and thence through the cars, which are all so connected by means of side-doors L and flexible connections F as to form one continuous passage for the air. The platforms P (as will be seen from the sectional plan, fig. 3) have side-doors L, which are to be closed, as represented in the figures, when the train is in motion. The cars are to be connected by means of flexible connections F on frames *d d'*. After the cars have been coupled together, these frames are brought together (from position fig. 2 into position fig. 1) and secured by means of clasps.

*Claim.*—The method described of constructing, attaching, and using the flexible connections, when constructed, attached, and used substantially as set forth.

Also, the combination of the flexible connections with any suitable method of receiving the air at the front end of the tender.

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No. 13,542.—JOHN CLARK.—*Self-Regulating Valve for Ventilation.*—Patented September 11, 1855. (Plates, p. 116.)

This is an apparatus for operating dampers of stoves. When the room is a little colder than is desired, the cylinder A (made of glass or other material) is to be corked at *c*, and the bellows B closed, so as to make the cylinder air-tight. The toothed end of the rod C (attached to the bellows) is then connected to the rod which works the valve or damper of the stove. When the air in the room and in the cylinder gets warmer, it will expand and extend the bellows, and push the rod C, and thus act on the damper-rod; and when it becomes colder, the air in the cylinder will contract, and thereby draw back the rod C.

The inventor says: That which I design to *claim*, as my particular invention, is the air-tight cylinder and bellows, of whatever material they may be made, for the purpose of obtaining a motive power from the expansion and contraction of the air, and to whatever use it may be applied.

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No. 13,725.—W. L. B. LEWIS.—*Ventilating Railroad Car.*—Patented October 30, 1855. (Plates, p. 116.)

The deflector A moves in guides *b* around the periphery of the case B attached to the outside of the window-frame, and is provided with a wire-gauze screen K. Cords C C serve to pull the deflector either to the right or to the left, so as to compel a current of air to pass from the outside through the screen into the car, when the latter is under way.

The inventor says: I do not claim the use of a ventilating box or case, like that of Nelson Goodyear; nor do I claim the use of one or more sheets of wire-gauze or screens through which to pass the air,

so as to preclude the entrance of sparks and dust, as these have been used before.

But I *claim* the peculiar construction and arrangement of the ventilating box or case, as described and set forth.

I claim a reciprocating curved deflector A, adapted to be moved only horizontally to right or left, for directing currents of air into the car, in the specific manner set forth and described.

No. 13,732.—J. K. TAYLOR.—*Method of Ventilating Railroad Cars.*—Patented October 30, 1855. (Plates, p. 116.)

The upper and lower ends of the vertical slotted tubes *c* (outside of windows H) communicate with horizontal tubes *d*, which latter communicate with the flaring space *e*. As the car moves along, air enters the space *e*, and passes out through the slots of tubes *c* in thin sheets, as indicated by the arrows. These thin sheets of air prevent dust from entering the car through the windows, and also serve to draw the air out from within the car through the windows, and thereby cause, in connection with the fan F, (which latter drives a current of air through the water-box B, and up through tubes B into the car,) a current of pure air to circulate through the car.

I do not claim, separately, forcing air through water before it enters the cars, in order to purify it or cleanse it from dust, cinders, &c., for this has been done in various ways;

But I *claim* the vertical slotted tubes *c* placed at the outer sides of the windows H of the car, and having air forced through them by the means described, or in any other manner, for the purpose specified.

## VI.—STEAM AND GAS ENGINES.

No. 12,261.—GUSTAVUS WEISSENBORN.—*Improved Arrangement of Filtering Apparatus to Prevent Incrustation in Steam-Boilers.*—Patented January 16, 1855. (Plates, p. 117.)

The cold water enters through pipe B and jet-holes E into chamber D, where its temperature is raised by means of its coming in contact with the exhaust-steam entering through pipe C; the water passes into the basin-chamber F and over the basin F<sup>1</sup>, (which is intended to retard its motion, and keep it so much longer in contact with the steam,) on and through a rough stone filter G, hence through a brush-wood filter H, and finally through a filter K which contains a horse-dung or other compound impregnated with a free alkali. The water passes out through the perforations in the casing of filter K, and into feed-pipe M, which leads to the boiler.

The inventor says: I make no claim to the idea of purifying water

before it enters the boiler for the purpose of preventing incrustation, for that has been done before.

I *claim* the arrangement of the exhaust-chamber D, girdled at its lower part by the cold water B<sup>1</sup>, with the basin-chamber F and filters G H K, in the manner and for the purpose set forth.

No. 12,360.—THOMAS CHAMPION.—*Improvement in Steam-Boilers.*—Patented February 6, 1855. (Plates, p. 117.)

The object of the double cone S S<sup>2</sup> tube is, that the heat in rising through the lower cone, which is surrounded by water, may act with the greatest effect; but, while passing through the upper cone, which is surrounded by steam, it is prevented from heating it to a degree that would be dangerous, because it enlarges upward, and thus allows the heat to pass off freely. With tubes of uniform diameter, that portion passing through the steam becomes often overheated, and is liable to cause explosion.

*Claim.*—1st. Arranging an annular flue Q at the bottom of an upright boiler, for receiving the air at its mouth R, and conducting it at R<sup>2</sup> beneath the grate, as illustrated in figure 5 of the drawings. (See figure 2 of the engraving.)

2d. Making the vertical tube in the form of a double cone, the upper cone being inverted, and the two united together at their apices, the same being for the object and possessing the advantages stated.

No. 12,385.—ASAHEL FAIRCHILD.—*Improvement in Steam-Boiler Chimneys.*—Patented February 13, 1855. (Plates, p. 117.)

*Claim.*—Connecting the chimneys of a steam-boiler furnace B to the flue connecting breeching *a* thereof, by means of a cylindrical joint *e d h b c*, arranged in such a manner that the chimney can be lowered into a horizontal position, (see fig. 2), without producing openings in said joint, and also without closing the connection between the chimney and the furnace-flues, substantially as set forth. (See engravings.)

No. 12,654.—HIRAM STRAIT.—*Improved arrangement of Means for Freeing Steam-Boilers from Sediment.*—Patented April 3, 1855. (Plates, p. 117.)

A, steam-chamber; B, water-chamber; C, sediment-chamber; D, partition-plate; E, valve-plate; F, blow-off pipe, or flue for steam; G, blow-off pipe for water; H, blow-off cock, or valve of the sediment-chamber; I, operating rod of the valve-plate or series of valves; J, stop-cocks attached to the blow-off pipes; K, bracket to hold the valve-plate down on partition-plate. The sediments pass through the perforations in the valve-plate and partition-plate (when said perforations are brought directly over each other by means of operating rod I) and into the temporary blow-off chamber C for their final expulsion, which is effected by opening the stop-cocks J in the blow-off pipes.

*Claim.*—In the construction of a steam-boiler of any kind, the arrangement and combination of the valved partition, blow-off pipes, and cock or valves, so as to expel its sediment, mud, scales, impurities, or incrustations, at any time and in a few minutes, by the joint or separate force and pressure of its own steam and water, without exhausting either or suspending any of its ordinary duties or business, and thus render a steam-boiler strictly and thoroughly self-cleaning, substantially as herein specified.

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No. 12,665.—HORACE BOARDMAN.—*Improvement in Steam-Boilers.*—Patented April 10, 1855. (Plates, p. 117.)

In boilers with vertical flues the tendency of the flame and heated products of combustion is to pass over the first flues of the series nearest to the fire-box, and not to descend them until checked near the end of the boiler. This disseminates the burning products and heat unequally through the flues. To overcome this irregularity is the object of this improvement. The tubes F are gradually diminishing in diameter throughout the boiler, the larger ones being placed nearest the fire-box A, and the smallest most remote from it, so as to have more flue space at one end than at the other, and thus draw the heat through those tubes over which its tendency to pass is the greatest, and restrain its passage through those in which the greater quantity of heat tends to pass, and thus equalize the heat throughout combustion chamber E. Instead of diminishing the size of the tubes, only the tops of them may be gradually diminished, leaving the main part of them of uniform size. This can be done by using a series of thimbles *a* (fig. 3), of the proper inner diameters.

The plates H, of the form exhibited in the illustration, are to facilitate the egress of the heat from the larger tubes and to check it through the smaller ones, so as to regulate the egress of the heat, on the same principle as its ingress (above described). By inclining the tube-sheets so as to be at right-angles with the inclined tubes, there is no difficulty in riveting. If the tubes were not perpendicular to the tube-sheets, the ends of the tubes would have to be bent to meet the sheets.

*Claim.*—1st. The graduation of the openings in the flues or tubes, in the manner and for the purpose set forth.

2d. In connection with the flues or tubes, the semi-division flue-plates H, in the chamber G, for regulating and equalizing the egress of the heated products through said tubes, as set forth.

3d. The inclination of the tubes and tube-sheets, for the double purpose of preserving a space between the tubes for the sediment to collect in, and from which it can be readily removed, and for preserving a square surface between the tops of the tubes and said sheets, so that they can be fairly riveted, as set forth.

No. 12,673.—JOSIAH J. DUTCHER.—*Improvements in Locomotive Boilers.*  
—Patented April 10, 1855. (Plates, p. 117.)

The inverted cone E, presenting a large heating surface to the fire with which it is surrounded, is to generate steam rapidly, and is also intended to prevent the fire packing, as the fire-box is larger at the bottom than at the top, where it receives the fuel, and allows the free escape of ashes.

By bringing the rod L in the position indicated in the figure in broken lines, the grates J J and ash-traps c will assume the position represented in the figure by broken lines. The fire will fall through the traps into the ash-pan. By removing the lever to its original position, the grates and traps are quickly replaced. The curb-plates g and h are to prevent any live coals quickly running out, and also to allow the ashes, &c., to cool before leaving the ash-pan.

Figs. 1 and 2 are vertical sections, fig. 3 a sectional plan.

*Claim.*—1st. The within-described arrangement of water-spaces within and contiguous to the furnace, and leading therefrom to the body of the boiler, consisting of the horizontal pipe D, inverted cone E, upright tube G, and horizontal tube I, all connected substantially as herein described. (See illustration.)

2d. In combination with a hinged fire-grate or grates to the boiler-furnaces I claim providing hinged traps in the ash-pan, to be lowered and raised, or opened and closed, simultaneously with the fire-grate or grates, by means of an upright rod K passing through the boiler, and suspended from a lever L, within the control of the engineer or fireman while at his usual post, the said rod K operating upon the said grates and traps by means of arms d d' d<sup>1</sup> or their equivalents, all substantially as herein described. (See illustration.)

3d. Retarding the escape down the inclined ash-pan of the ashes, coal, &c., falling thereon through the grate by means of curb-plate g h, arranged as described, or in any equivalent manner, to make the said ashes, coal, &c., take a circuitous direction.

No. 12,835.—THOMAS J. SLOAN.—*Improvement in Apparatus for Regulating Supply of Water to Steam-Boilers.*—Patented May 8, 1855. (Plates, p. 117.)

The float b within the boiler a is attached to a rock-shaft d, by means of a rod c. The shaft d, which has steam-tight bearings in the casing e, has on its outer end an arm f, which is connected (by means of link g) to catch h, which is pivoted to the stem i of the steam-whistle valve j. The stem k of the supply-valve is linked to rock-shaft n, which shaft has on its outer end an arm o, provided with a pin p.

When the water in the boiler gets low, the sinking of the float raises arm f and catch h, until pin p of vibrating-arm o touches said catch, and draws out the steam whistle-valve j, thereby giving the alarm.

When the water and float rise above the high-water mark, the arm f is depressed until the upper end of arm o strikes the front part of said arm f, (as shown in dotted lines in fig. 1,) whereby the supply-valve



is kept open, so that the water which is forced in at every stroke of the supply-pump will follow the piston back and run out of the boiler, until the sinking of the float again sets free the arm *o*.

*Claim.*—The employment of the feed-water before it enters the boiler as a motor, for giving the alarm when the water is too low in a steam-boiler or generator, substantially as described, in combination with the float inside the boiler, for indicating the level of water and setting the mechanism, that the alarm may be operated by the mechanism receiving motion from the feed-water, substantially as specified.

Also, stopping the supply of water to the boiler by the employment of a stop to check the working of the valve, substantially as specified; but this I only *claim* when the said stop is simply set by the float within the boiler, as set forth.

No. 12,893.—THOMAS G. BOONE.—*Improvement in Steam-Boilers.*—Patented May 22, 1855. (Plates, p. 118.)

The radiant heat is conducted from the grates K to the water through the tubes G G<sup>1</sup> G<sup>2</sup>, while that portion of heat not so taken off either remains to support combustion, or is carried and applied to the upper part of the tubes, and to the tube-sheet F. The upper parts of the tubes are adapted, from the extensive surface therein presented, to take from the flame, or heated air, and make effective in generating steam the heat of that part of the combustion, in addition to that taken direct from the fuel itself through the lower part of the tubes. The heated air is made still further effective by the employment of the tubes L and *p*, which present a considerable immersed surface. The ascent of steam and water in the tubes G G<sup>1</sup> G<sup>2</sup> causes a downward current in I, to supply the displacement from the chamber C, which, after ebullition commences, is soon heated by water from the lower end of the tubes I. By this arrangement, the tubes G G<sup>1</sup> G<sup>2</sup> are plentifully supplied with water, while exposed to the intense radiated heat. The tubes I are placed inside of the tubes G<sup>1</sup> G<sup>2</sup>, and are protected from the action of the fire by being packed around with fire-clay and sand, or with any non-conducting material.

*Claim.*—The arrangement of the vertical water-tubes, fire-surfaces, upper and lower water-spaces C and D, and non-conducting lining, for giving circulation, substantially as herein set forth.

No. 12,993.—THOMAS CHAMPION.—*Improvement in Feeding Water to Steam-Boilers.*—Patented June 5, 1855. (Plates, p. 118.)

This improvement serves to sprinkle all the inner surface of the boiler that is bare, or likely to become bare of water, while fire is acting on the opposite sides of the plates.

I *claim* supplying steam-boilers with all their water through a sprinkler that is connected with the lower water-space and feed-pipe by a valve at their junction, which allows the water that passes up

through the sprinkler to jet the plates when the pump is not acting, and so long as any water remains in the boiler above the fire or feed-pipe, substantially in the manner and for the purpose set forth.

No. 13,111.—CHARLES F. THOMAS.—*Improvement in Steam-Boilers*.—Patented June 19, 1855. (Plates, p. 118.)

The nature of this improvement will be understood from the claim and engravings.

*Claim.*—The improvement of extending the tube-sheet *o*, smoke-tubes P P, and boiler M, or its enclosing-sheet R, into the fire-place I, and over the fire-grate K, as described, in order not only that the part so extended may serve as a beam or strut to support the crown-sheet against the superincumbent pressure of the steam, but that the flame and gases from the fire may not only pass against the tube-sheet and enclosing-sheet R of the extended part of the boiler, but also through the extended parts of the tubes within such projected part of the boiler, as specified, the same serving to greatly increase the extent of heating-surface exposed to the fire.

No. 13,146.—THOS. CHAMPION.—*Improved Steam-Boiler Furnace*.—Patented June 26, 1855. (Plates, p. 118.)

When the fires are up, the damper I and the furnace and draught-doors are closed. The steam from the engine is then let into the pipe A, and through its branches into the flues C, where it mingles with and drives the smoke and other gases back into the fire to be consumed; thus furnishing a forced draught through the flues and back into the fire; the necessary atmospheric air being furnished through pipes D E to keep up regular combustion.

*Claim.*—Using the exhaust-steam in a closed stack, as a blower to return the heated gases or products of combustion, with which it commingles back through flues or passages to the fire again and again, to be reburned, substantially as described.

No. 13,168.—JACOB HARSHMAN.—*Improvement in Steam-Boilers*.—Patented July 3, 1855. (Plates, p. 118.)

The inventor says, in his specification: "I maintain that, in case of steam-boilers, the copper covering C holds a peculiar government over the elements within a boiler in affinity with certain external elements; that in certain localities there are elements surrounding the steam-room of boilers that will, under certain conditions of heat, unite in explosive proportion with the elements within. The copper covering will conduct off the excess of caloric in such cases, so that violent explosions will be prevented. By applying the copper covering to stoves, the surrounding atmosphere is prevented from being vitiated by deleterious gases, which emanate from ordinary iron stoves. The heat is radiated more uniformly through the room."

*Claim.*—Forming an external casing or covering of copper for stoves and all heat-diffusing devices, or apparatus, and steam-boilers, in the manner and for the purposes as herein shown and described.

No. 19,193.—ROBT. WILSON.—*Improvement in Apparatus for Heating Feed-Water to Steam-Boilers.*—Patented July 3, 1855. (Plates, p. 118.)

The escape-pipe *b* from the cylinder enters the cistern *c*, and has a valve on its upper end to allow the escape of steam, and to prevent the ingress of water from the cistern. The exit-pipe *f* is bell-mouthed at top to collect the condensed steam, as said steam strikes the cold air. Pipe *e* supplies a constant jet of cold water. Pipe *g*, with a force-pump within it and a valve at bottom, serves to urge the water from the cistern into the boiler *a*, and thus keep it supplied.

*Claim.*—The arrangement of the feed-water pipe *e*, opening within the exit-steam pipe *f*, in relation to the exhaust-steam pipe *b*, within the feed-water reservoir, whereby the entire exhaust-steam may be condensed, and the entire feed-water pass through the reservoir, operating as and for the purposes set forth.

No. 13,223.—JAMES MURPHY.—*Improvement in Steam-Boilers.*—Patented July 10, 1855. (Plates, p. 118.)

*c* is the tube with the bead *n*, and *d* is the tube-sheet, grooved so as to receive the metal *o*.

*Claim.*—In the construction of tubular steam-boilers in combination with beads or their equivalents on the tubes, grooving the surface of the tube-sheets around or partly around the tube-holes, to receive the metal of the tube when riveted, substantially as described, by means of which I am enabled more effectually to secure tight and strong joints than by any other known method, as set forth.

No. 13,298.—WM. BALL.—*Improvement in Feeding Water to Steam-Boilers by Auxiliary Engines.*—Patented July 24, 1855. (Plates, p. 118.)

Pipe *F*, which connects the boiler *A* with the feed-engine, (not represented in the engravings,) enters the boiler at the exact level at which the water is required to stand. Should the water-level rise, the additional quantity of water thrown into pipe *F* would so obstruct the passage of the steam through cock *M* as instantly to reduce the speed, and consequently the feeding capacity, of the feed-engine. Should the water-level fall below the mouth of the pipe, steam alone would pass through the pipe, and thus the speed of the feed-engine would be accelerated.

*Claim.*—Causing the pipe *F*, which conveys the steam from the boiler to the feed-engine, to enter the boiler at the exact level at which the water is required to stand, for the purpose substantially as set forth.

No. 13,363.—PAUL STILLMAN.—*Improvement in Water-Gauges for Steam-Boilers.*—Patented July 31, 1855. (Plates, p. 118.)

A is the boiler-head to which the gauge is attached; B glass tube; G the chamber, and *h* the key of a cock for forming or stopping the connexion between the tube and the boiler; *j* guards for protecting the glass tube, secured to G by passing through lugs on G, so that they may be removed if necessary. The glass can be easily removed and replaced by removing one of the keys, the axes of which are on a line with the tube; by this means, also, access can be had to the glass for other purposes; and by reversing the upper key, water can be blown through the glass; and by reversing the lower key, steam is blown through so as to cleanse the tube.

*Claim.*—The described glass water-gauges, in their construction and arrangement as specified, with the cocks having the axes of their chambers and keys in line with that of the glass tube, and the chambers having double water-ways, for the purposes set forth, and the movable guard-rods supported by lugs on the chambers, in the manner described.

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No. 13,425.—J. J. DUTCHER.—*Improvement in Steam-Boilers.*—Patented August 14, 1855. (Plates, p. 119.)

The products of combustion pass from the fire-box F through *a* C, *h* d D and *l* to the smoke-box. The water circulates around *a* C, through C, between *e* and *d*, through *g* and *l*, and around D, having a complete circulation both through and around the flues.

*Claim.*—1st. Placing within the cylindrical water-body B of a boiler one or more cylindrical flues C or D, terminating at their ends in frustrums of cones, which frustrums all have the truncated ends towards the fire-box, and the bases towards the chimney, and serve to form communication through the cylinders from the fire-box and towards the chimney, substantially as set forth.

2d. The arrangement of the two cylinders C D, cones *a* b d f, pipes *c* g, passages *h* and *l*, as fully described.

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No. 13,468.—FREDERICK P. DIMPFEL.—*Improved Method of Facilitating the Removal of Incrustation from Steam-Boilers.*—Patented August 28, 1855. (Plates, p. 119.)

Metal plates *b* are inserted into the tubes, so as to prevent the incrustation from forming on the entire circle of the tube-surface, which causes a main difficulty in the cleaning process, as the circular crust must first be broken before it can be removed.

*Claim.*—The method, substantially as described, of facilitating the removal of incrustation in steam-boilers, by inducing breaks in the circle of the incrustation, in the manner described.

No. 13,567.—JOEL DENSMORE.—*Improvement in Feed-Water Apparatus of Steam-Boilers.*—Patented September 18, 1855. (Plates, p. 119.)

The sliding-valve E uncovers the hole F at the time the piston-head I arrives at the end of its stroke towards F. The pressure of the water in the boiler through pipe M closes the valve P. The motion of piston-head I towards F, together with the condensation of the steam in the pump-cylinder S, opens valve O, thereby drawing the water up through tube N, and filling the pump-cylinder. The hole F remains open until the piston gets to the end of its stroke towards the boiler A, when it closes, and remains closed until the piston-head gets back to the end of its stroke towards F. As the piston-head moves towards the boiler, the cylinder behind it is filled with steam admitted from pipe C by the opening of valve E, while the water with which the cylinder was filled is forced into the boiler through valve P and pipe M. If the water should rise any higher than line B, it would be forced by the steam through C, and through valve-opening E into the pump-cylinder, and through piston-valve K, and at the return-stroke of the piston-head it would be repumped into boiler A.

I *claim* the arrangement of the tube C, to enter the boiler at the water-line B, with the steam-chest and pump-cylinder, constructed and operated in the manner described, by which the steam of the boilers assists the pump worked by the engine to force water into the boiler, as herein set forth.

No. 13,583.—JOHN M. REEDER.—*Improvement in Safety Apparatus for Steam-Boilers.*—Patented September 18, 1855. (Plates, p. 119.)

The object of this invention is to limit the engineer to any given quantity of steam, and make it impossible for him to carry more, as slot E, in socket D, permits stem F to rise with weight G, which is to be the exact weight of steam required, while the upper collar P, on stem B, prevents weight on ring A having any effect, and the collar F, below cap C, prevents stem B from being taken out. When the steam exceeds the given limit, the water flows freely (see arrows), and dampens the fire. The valve I then immediately seats itself.

*Claim.*—Connecting the valve-stems D and F, so that the valve I may be raised by hand from the outside to flood the fires, but cannot be weighted from the outside to increase the steam over a given quantity, as set forth.

No. 13,619.—CHAS. MOORE.—*Improvement in Steam-Boilers.*—Patented October 2, 1855. (Plates, p. 119.)

A circular partition T surrounds the water-space S, extending up above the water-line U, so as to prevent the highly heated water over the flue-chamber I, and that which passes up through pipes P, from mixing with the water next to the outside of the boiler, so as to generate most of the steam in the pipes P, and over the chamber I, and inside

the partition T, without heating all the water in the boiler so hot as would be necessary if the circulation of the water were not limited.

The horizontal parts of the tubes are surrounded by the burning fuel, so as to generate the steam from the heat of the centre of the fire.

1st. I *claim* limiting the circulation of the water in a steam-boiler, by means of a partition so constructed as to separate the water over the fire, or some portion of it, or the water which is highly heated, or that which ascends through the tubes, from mixing with the water around the sides of the boiler, which is at a lower temperature, substantially as described, for the purposes set forth, and thereby prevent it from descending, so as to enter the tubes again at their lower ends.

2d. I claim so constructing and arranging the tubes in the fire-space that the burning fuel will surround the horizontal parts of the tubes and a portion of the perpendicular parts, substantially as described, for the purposes set forth.

3d. I claim extending the tubes downwards, which pass through the fire-space after they leave said space, and terminating them perpendicularly in the water-space, so as to prevent or retard the water which is highly heated, or the steam generated in the tubes, from escaping at the lower end, substantially as described.

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No. 13,761.—HENRY N. PETTENGILL.—*Improvement in Steam-Boilers*.—Patented November 6, 1855. (Plates, p. 119.)

The fire from the furnace passes through the flues C to the back end of the boiler into a casing, from which it returns through the flues E. The water-chambers H connect with the boiler at H<sup>1</sup>. The projections I I<sup>1</sup> extend longitudinally from one end of the boiler to the other. The feed-water pipe J communicates with the projections I by means of the pipes J<sup>1</sup>, and with the chambers H by the pipes J<sup>2</sup>. By means of the chambers H there is no waste heat, as the heat, in passing through the outside main flues, is taken up in the water-chambers H and outside projections I<sup>1</sup>. Thus a large amount of fire-surface is obtained.

The inventor says: I do not claim any one of the several parts described; but I *claim* the arrangement of the flues C and E, the water-chambers H H, and projections I and I<sup>1</sup>, with the feed-water pipes J and J<sup>1</sup>, combined in the manner and for the purpose set forth.

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No. 13,903.—JOSEPHUS ECHOLS.—*Improvement in Water-Gauges for Steam-Boilers*.—Patented December 11, 1855. (Plates, p. 119.)

B is the gauge-tube; I, the float with the scale suspended from it, the latter passing down below the apertures G H; these apertures are provided with glasses g convex towards the interior of the tube, so as to be able to resist the inside pressure. The scale can be seen and read off through said glasses. The upper end of the tube communicates with the steam, and the lower end with the water in the boiler, as usual.

The inventor says: Although I have described the glasses on each

side as being attached to nuts in frames which can be removed, I do not wish to limit myself to this, as glasses on one side may be secured directly to the gauge-tube, and be got at for the purpose of cleaning when the glass or glasses are removed on the other side.

Nor do I wish to be understood as limiting myself to the special mode of construction specified, as other equivalent modes may be substituted.

I *claim* making gauge-tubes, for indicating the height of water in steam-boilers, with an aperture provided with convex glass, presenting the convex or arched surface to the pressure in the tube, substantially as and for the purpose specified.

No. 13,983.—HENRY F. GOSSIN and LOUIS A. GOSSIN.—*Improvement in Steam-Boiler Furnaces*.—Patented December 25, 1855. (Plates, p. 119.)

The partition walls 1 2 3 and 4 are all arched at the bottom so as leave open spaces; the partitions 2 and 4 come close up to the boiler and support it, but the partitions 1 and 3 leave open spaces between their upper edges and the surface of the boiler. The cold air, by reason of its greater gravity, will pass through the lower arches, and the heated air will ascend and pass through the said passages between the upper edges of the partitions and the boiler.

*Claim*.—Constructing the flues of boiler-furnaces with cross-walls, or diaphragms, perforated with passages, substantially in the manner and for the purposes described.

No. 13,209.—FRANCIS BROWN BLANCHARD.—*Improvement in Air and Steam Engines*.—Patented July 10, 1855. (Plates, p. 120.)

A communication between the steam-space A and either one or both the chambers C C<sup>1</sup> can be effected by opening or closing the valves *v* on top of the pipes M M. When the steam is admitted into chamber C, it will take up a portion of the heat therein, thus reducing the heat of the gases therein and increasing the rapidity of the current passing through the stack of pipes into chamber C<sup>1</sup>. Such an increase in the velocity of the current will, of course, cause it to yield up less of its heat to the tubes than would result were it to remain longer in contact with them. If steam is admitted into C<sup>1</sup>, the volume to pass through the tubular stack will be diminished, consequently its motion slower; and, after it has expended most of its heat in the tubular stack, it will come in contact with the steam, to which it will yield a portion of its heat until the temperature of the mixture is equalized.

In the diagram, fig. 1, A is the boiler; I, the air-receiver; A<sup>1</sup>, the air-condenser; and A<sup>2</sup>, the air-pump. E, fuel-supplying tube; *h* are the grate-bars.

The inventor says: I *claim*, as arranged with the boiler and stack of tubes *b b b*, or their equivalents, the two chambers C C<sup>1</sup> and their respective connection-pipes M M; such chambers, pipes, and stack of

tubes being used for the purpose of regulating the temperature of the mixture of steam and gases, or producing results substantially as specified.

I also claim, in combination with the air-pump and the furnace, the tubular air-condenser, constructed substantially as described, and for the purpose of reducing the heat of the condensed air and relieving the air-pump from back pressure, substantially as set forth.

I claim combining with the coal-feeder the distributing valve *f*. I do not claim hollow grates, but I claim arranging them on an angle, as described, in combination with arranging them with and directly under a fuel-supplying tube or hopper, so that the fuel dropped out of the latter, and upon the inclined grates, may be distributed by them, as set forth.

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No. 13,348.—JOHN ERICSSON.—*Improvement in Air-Engines*.—Patented July 31, 1855. (Plates, p. 120.)

*b*<sup>1</sup>, working-piston; *c*<sup>1</sup>, supply-piston; *f*, exhaust-port; *e*, induction-port. The regenerator consists of tubes *k*; *m* are the heater-tubes. By means of a hand air-pump, applied to some part of the regenerator, a supply of atmospheric air is introduced at about the pressure of the atmosphere, and then the engine is in a condition to begin its operation. Starting with the pistons of one engine in the position represented in figure 2, at the extremity of their outward-stroke, as the crank *s*<sup>1</sup>, moving in the direction indicated by the arrows, is making that part of its circuit near the outer dead-point, and therefore imparting but little motion to the working-piston *b*<sup>1</sup>, the supply-piston *c*<sup>1</sup> is carried from the working-piston and towards the head of the cylinder with a rapid motion by the action of the cam *K*<sup>1</sup> on the roller *J*<sup>2</sup> of the arm *g*<sup>1</sup>, the cam rotating in the direction of the arrow, and its acting face being formed as represented, that the piston may be gradually started, rapidly accelerated, and, near the end, gradually arrested, and there retained in a state of rest as the extremity of the cam passes the roller. During this inward motion of the supply-piston, the working-piston will be opened by the pressure of the atmosphere, to permit cold air to enter and fill that part of the cylinder between the two pistons. So soon as the supply-piston stops, the exhaust-port closes, and the continued inward motion of the working-piston begins to compress the cold air thus supplied, which of course closes the self-acting valve *d*<sup>1</sup>, through which the supply was admitted by atmospheric pressure. Thus supplied, cold air continues to be compressed by the working-piston, until the end of its inward-stroke; and, as the power for effecting this compression is derived for the time being from the other engine, it is important to observe the condition of the connections. At the time the supply-piston of one engine is started, and the air is entering by atmospheric pressure, and when the arm *o*<sup>1</sup> on rock-shaft *p*<sup>1</sup>, with which the working-piston is connected by the rod *n*<sup>1</sup>, is at its greatest leverage, the corresponding arm of the rock-shaft of the opposite engine is at its shortest leverage, but is moved inwards, and the supply air, by reason of being gradually compressed, increases the resistance, the arm *o*<sup>1</sup> gradually shortens in



leverage, and the same arm of the opposite engine gradually, and in nearly the same ratio, increases in leverage on the principle of the bent lever; thus applying the power required to compress the supply air to the best advantage. It should be borne in mind, however, that the power thus applied to compress the supply air is not actually expended, but merely borrowed; for it is so much added to the elastic force of the air by which, when heated, the engine is impelled.

Just before the supply-piston begins the inward-stroke, just described, the eduction-valve  $g$  is opened, the induction-valve  $h$  having been previously closed so that the charge of the heated air, by which the previous stroke of the engine was effected, is permitted to escape freely into the atmosphere, so that the power required to move the supply-piston inward is very slight, the air escaping freely to the atmosphere on one side, and entering by atmospheric pressure on the other, through the valve  $d^1$ ; but as the heated air exhausts or escapes from the cylinder, it passes around and among the series of small tubes  $k$  of the regenerator, thus imparting its heat through the metal of the tubes to the cold air contained inside of the tubes, which air is thus partially heated preparatory to being finally heated in passing through the heater-tubes. In this way, much of the heat which would be otherwise wasted is saved. The supply of cold air having been introduced and compressed, the engine is prepared to be impelled by the expansive force of the heated air. The eduction valve  $g$  having been closed during the greater part of the inward motion of the working-piston, the induction-valve  $h^1$  is now opened, which admits the heated air from the heater of the cylinder, by which the supply-piston is forced outwards towards the working-piston. The form of the fall of the cam  $l^1$  is such as to cause the piston to be carried back with a rapid accelerated motion, until it comes nearly in contact with the working-piston; and, at first, in this outward motion of the supply-piston, the already compressed supply air between the two pistons is still further compressed, not by the power of the engine, but by the elastic force of the heated air, the supply-piston being as it were suspended between the heated air from the heater on one side and the cold air of the other, with the self-acting valve  $r$  (in the side of the cylinder) interposed between the two; for it must be remembered that, as the heater and regenerator are in communication, the air, which is a perfectly elastic fluid, will be under equal pressure in both, notwithstanding a portion is more highly heated than the other; and, as the supply air in the cylinder is simply separated from the air in the regenerator by the interposed valve  $r$  in the side of the cylinder, the supply-piston will be moved outwards by the heated air, until the supply air is compressed to an equal tension, and then the further motion of the supply-piston, effected by the cam  $l^1$  as it approaches the working-piston, will transfer the supply air from the cylinder to the regenerator, through valve  $r^1$ . The only power expended by the engine in this transfer will be the small amount required to move the supply-piston, between two equal pressures, to give the slight preponderance to the one necessary to open the valve  $r$ , through which the transfer is made. The moment the supply-piston passes this valve and overtakes the working-piston, the preponderance of pressure ceases, and the valve closes by gravity.

I *claim* the method of supplying fresh air to the engine, compressing and transferring it to the regenerator and heater, or either, by the action of the supply and working-pistons within the one cylinder, operating on the principle and in the manner substantially as described, whereby the air is admitted, under atmospheric pressure, as the supply-piston is moving from the working-piston, as the previous charge of heated air is exhausting; so that the said supply-piston moves in equilibrio, or nearly so, and by which also the supply-air is finally compressed and then transferred to the regenerator and heater, or either, as the supply-piston moves between the supply-air and heated-air, during the periods of the nearly stationary position of the working-piston.

I also claim, in combination with the double-piston movement of each cylinder, the methods of connecting the working-pistons of two single-acting engines to constitute a double-acting engine, by means of two sets of vibratory arms attached to each other, and vibrating on a common centre connected with the two working-pistons, and with the two cranks on opposite sides of the crank-shaft, the two sets of arms acting on the principle of the bent-lever, and the crank-shaft being so located relatively to the cylinders and the centres of vibration of the arms, substantially as described, that the working-piston shall be at the end of its inward stroke at the time the crank is passing the dead point furthest from the point of connection of the connecting-rods with the vibrating-arm, as described, by which the power of that working-piston which is being impelled by the heated air is applied to the best advantage to operate the other working-piston during its return-stroke, and by which also the working piston remains nearly at rest during the time the supply-piston is making that part of its outward-stroke, during which the partially-compressed air is finally and fully compressed and transferred to the regenerator and heater, or either, as described.

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No. 12,715.—ALFRED DRAKE.—*Improvement in Explosive-Gas Engines.*  
—Patented April 17, 1855. (Plates, p. 121.)

The water-jacket I I surrounds the cylinder, and communicates, by means of pipe *t*, with the stationary tube P P<sup>1</sup>, on which the hollow piston-rod slides; and the water passes from the interior of the piston-rod through opening 3 into the hollow piston, circulates therein, and returns into the piston-rod through aperture 4, and finally escapes from the piston-rod through the hole 5. A stuffing-box *x*, packed with asbestos, or fine wire, forms a tight joint between the piston-rod and tube P P<sup>1</sup>, at the extreme end of the former.

The construction of the igniter is apparent from the figure. The blow-pipe *y* y<sup>1</sup> is attached to the under-side of cap *v* v<sup>1</sup>; the thimble *s* s<sup>1</sup> s<sup>2</sup> is attached to the under-side of the piece *k* k<sup>1</sup>.

In starting the engine, a quantity of air and gas is thrown (by a hand-pump) into reservoir R, sufficient to heat up the igniter, the piston being so placed that the extremity of one of the igniters *s*<sup>1</sup> is exposed. Cock *l*, attached to the supply-pipe which communicates with the blow-pipe *y* y<sup>1</sup>, is then opened, and a light applied to opening *u*,

and thus the trail is fired. The flame of the compound blow-pipe being directed against  $s^1$ , raises the temperature of the igniter at  $s^1$  to the exploding point. The first motion of the piston is then given by throwing into the cylinder, from reservoir R, an explosive mixture, which, being fired by the igniter, impels the piston. The piston, in its travel, draws in a charge through the induction-valve, at the opposite end. This charge is, in turn, fired by the exposed igniter at the opposite end, and thus a reciprocating motion is maintained.

The inventor says: I do not wish to claim the employment or application of explosive admixtures of gases to engines;

But I do *claim*: 1st. The igniting apparatus, composed of the thimble  $s^1 s^2$  and the interior tube or blow-pipe  $y y^1$ , arranged and operating substantially as hereinbefore described.

2d. The arrangement and combination of the hollow piston-rod, piston, and jacket surrounding the cylinder, for the purpose of maintaining a constant circulation of water for cooling, substantially as hereinbefore described.

No. 13,598.—WILLIAM MT. STORM.—*Improved Method of Actuating Gas-Engines*.—Patented September 25, 1855. (Plates, p. 121.)

Let A represent the cylinder of an engine in all respects similar to the steam-engine. Upon the top of its valve-chest  $A^1$  is located the chamber or separator B, in which is a double coil  $B^1$ , which communicates by the pipe C with a small water-boiler, or heater, or, more specifically, with the water-space or bottom of such heater, which is not shown on the drawing. The top end  $C^1$  of the coil, which I call the "flasher," communicates similarly with the steam-space of such heater. It will be evident that if the bottom of the flasher, or coil, is something above the level of the water in the heater, the coil will be filled with steam of a temperature corresponding to its pressure, and the coil will thereby be heated accordingly. This steam, on yielding heat through the coil of the gas-charged water, which is to be at each revolution of the engine thrown upon it, will, in proportion, be condensed and run down by its gravity back into the water-space of the boiler or heater. If, on the other hand, the height of the water in the heater is such as to fill the coil with water, rapid circulation will occur, keeping up uniformly the proper temperature, and answer every requisite for small engines; but in large engines it is desirable that the coil should be filled with steam, because it is desirable to be able to blow through with steam and warm up the engine before starting—a thing which the gas does not readily effect, because (and therein lies one of the greatest sources of economy) it does not part with its latent heat, like steam, by contact with cold surfaces within temperatures at all approachable in practice, unless abundance of water is at the same time present, as before explained, and then, of course, the water takes up the moderate amount of heat set free, and not the engine. To blow through with steam then at starting, supposing steam to fill the coil, I have a branch pipe D, with a stop-cock  $D^1$ , which effects the purpose, as will be readily seen. The bed-frame, or shear of the engine, may be cast

hollow, so as to form an extended air-tight chamber E, accessible by means of man-holes. A side view of the interior of this chamber is shown broken off in the drawing, so as to expose the interior and parts within. This chamber constitutes the cold receiver, or absorbing or recombining vessel, whichever it may most properly be termed, and may form a vessel or chamber distinct from the engine, if deemed more convenient, and would do so per necessity in the case of a steam-engine already built being altered to run by this method. This chamber should contain some gas-charged water, the level of which may be represented by the line  $xx$ . Now, suppose the flasher (coil) heated in the manner known,  $E^1$  is a pump whose length of stroke is made adjustable either by hand or, as I have devised, by the action of the governor of the engine, so that the quantity of gas-charged water it throws into the flasher (this being its purpose) shall be proportioned to the wants of, and load on, the engine, for the moment, this pump being worked with and by the engine, and so arranged and located that the gas-charged water from the receiver runs into it by its own gravity. As the piston moves on, while it is filling on one side of its piston it is forcing the gas-charged water from its opposite side, over through the pipe F, into the circle of perforated pipe  $x^1 x^1$  within the separator, from which circle, which constitutes a rose, it flies out in a shower of small jets over the hot coil, when the gas is flashed off from the water and creates a pressure in the separator, while the water falls to the bottom, out of contact with the coil, and forms a thin layer on the bottom of the separating chamber, where it still gives off gas during the decrease of pressure in the separator for the moment, caused by the withdrawal of the supply passing to the engine during the current stroke of its piston.

This momentary discharge of gas from the charge of water, after the removal from the source of heat, depresses its temperature usefully, leaving less to be rarefied in the cold receiver, as all that it possesses above the temperature of the latter, on its final release from the separator, must be. As the engine finishes its stroke, or rather just prior to this, this charge of now decharged water descends through the pipe to the chamber  $z$ ; to enable it to do which, a like portion is allowed to descend from this chamber by means of the pipe and cock  $z^1$  (the latter opening and closing properly for this purpose) to the cold receiver. Thus an undue accumulation of discharged water in the separating vessel is prevented. The gas meantime passes through the hollow column  $o$ , open at the top and not at the bottom, so that the gas may pass to the valve-chest of the engine, while the water cannot, and, passing through and actuating the engine, is allowed to escape, or exhausts through the pipe  $F^1$  into the cold receiver. This exhaust-pipe passes, as is seen, the length of the receiver, or cold chamber, under the gas-charged water, and is perforated with holes to permit the water to enter the pipe, and the gas to escape from it into the water, as it exhausts each in small jets, by which means great surface of mutual contact between the water and gas is provided; and surface I have found has a powerful influence in causing a more quick and sudden absorption, and my experiments would appear also to show that it has a considerable

influence even on the quantity absorbed. Although the water is already charged, it will promptly absorb the further comparatively trifling addition it receives at the moment from the engine; because it is not, of course, charged to its absolute maximum under the given temperature and pressure, if any, in the receiver, and it is maintained at the same degree below this maximum by the corresponding arrival to it of the charge of discharged water from the separator. Thus an accumulation of free gas and a consequent back pressure (exceeding any chosen point) retarding the engine is prevented in the receiver; and as at the same time a corresponding quantity of charged water is withdrawn to be forced into the separator, any accumulation of water in the separator is prevented. The exhaust-pipe at its end rises clear of the water, so as to permit an unimpeded exit to the spray that is likely to be coming out each time with some momentum. Operated in this manner, the engine shows and maintains a good engineer's vacuum in the cold receiver.

The air may be expelled by the steam used for blowing through as in the ordinary steam-engine, by opening the pot-cock G, drawing the slide-valve G<sup>1</sup> forward so as to open the port H of the engine, the valve of the branch pipe D being open, when, as will be easily traced, the steam will drive any air that may have leaked in from the separator, valve-chest, port H, pipe and pot-cock G, and last, from out of the receiver by the opening (at other times covered with an air-tight bonnet) in the side of the receiver, above the water (this opening is H<sup>1</sup>). All the cocks are now shut, the steam in the passages and receiver quickly condenses, and a vacuum is left in the latter. I I represent the extremities of a gridiron coil, through which water by a difference of temperature at the two extremes of the coil, amounting even to five or ten degrees, will circulate rapidly to and from a tank or other source not shown, and without admixture take up the heat arising with each charge of discharged water, conveying it away from the receiver, and keep the gas-charged water in it cool. It is very desirable that its temperature should not exceed 100° F., and as much down to about 40° F. as may be convenient. To prevent leakage is, as before remarked, the only point demanding special care in the management of this engine. To avoid any chance of leakage at the fixed joints is, as a matter of course, perfectly easy, and the moving or working joints may be reduced to three, viz: cylinder stuffing-box, that of the air-pump, and that of the valve-rod c.

A trifling leak is not of any moment; yet such a leak as is often neglected in the steam-engine, could not properly be permitted here. To overcome this difficulty, the stuffing-boxes should be made of extra length, so as to permit the employment of double gaskets 22<sup>1</sup>, with a skeleton ring between, so as to maintain there a space extending entirely around the piston-rod; and as no oil need be used for the stuffing-boxes, the gas-charged water being a fine lubricating medium, the gaskets may be solid rings of vulcanized India-rubber, in the form shown. This makes a frictionless, perfectly tight, and lasting joint, both between the space 3 and the cylinder, and between such space and the external air. Still, however, should there be, from any neglect, leakage by the greater pressure in the cylinder part 2<sup>1</sup>, the gas is caught in

the recess 3, where it is free to expand on the instant to a low, and therefore less insinuating pressure, while from the space 3 passes a small pipe 3<sup>1</sup>, by which the gas that has worked through is led to the receiver, into which it would be drawn and absorbed by the water. This will cover all danger and loss from leakage when the engine is worked with a compressed atmosphere of gas in the receiver, as hereinbefore suggested and hereinafter described; the little pipe from the space 3 may lead to any small vessel containing water, or the space itself may be filled with water, and this will instantly absorb, and so save, any gas that may happen to pass by 2<sup>1</sup>. These means perfectly master the difficulty of loss by chance leakage. Having now described the method of working my engine with a vacuum, I will describe the other method mentioned of working with an actual pressure in the receiver maintained by the same means below or above any chosen point, say 1 to 3 atmospheres, by which method I can attain greater force and economy than can be done even with the air of the vacuum. To prepare the engine for so working, suppose the gas-charged water to be in the receiver as before, and all air (which, if left present, would cause no particular inconvenience by this last method of working) to be expelled in the manner described. The flashing-coil being heated up, gas-charged water is injected upon it; the gas is set free therefrom, and passes to the cold receiver until there is a permanent excess pressure of gas over the water beyond the maximum it can absorb at the given pressure chosen. Every cubic inch of water will now contain say about 2,000 times its bulk of gas, if set free and expanded to the pressure of the atmosphere. The water which had held this gas absorbed may be now drawn away entirely from the separator by the branch-pipe and cock T shown in dotted lines, and the engine is ready to run. The pump E<sup>1</sup> may be left idle, and in lieu of it the pump J, about one-eighth the contents of the engine cylinder, is employed and worked stroke for stroke with the engine. This pump has a pipe J<sup>1</sup> extending down from each of its valves into the gas space of the cold receiver, where their extremities are surrounded by a wooden cylinder of much larger diameter than themselves, and of height sufficient to reach from the bottom to the top, or nearly so, of the cold receiver.

These wooden cylinders k have an extensive opening in their sides, over which is extended some absorbing material, as cotton-wick, shown in vertical lines; the ends of the wicks entering the water, which the wicks thus take up by capillary attraction, and become saturated. Now as the pump draws, the gas must pass it through and between this wick, and it becomes heavily laden with the gas-charged water in suspension, and so laden is forced by the pump, on its return stroke, over through the pipe K<sup>1</sup> and through a nose L in the jets upon the flashing coil; the gas is flashed off from the particles of water held in suspension, each particle being, as it were, effervesced and still more finely subdivided. This creates great pressure in the separator, aided at the same time by the free gas, which formed the vehicle to this water, being at the same moment heated and expanded, the whole now passing to the engine to actuate its piston, which is meanwhile resisted

by the far less pressure in the receiver; but as the pressure therein is the source of a pressure always proportionally greater in the separator, this back pressure is indirectly only a greater gain. The exhaust passes to the cold receiver and is absorbed, &c., as before, thus maintaining the same difference of pressure between the cold receiver and separator as at the commencement.

The inventor says: I *claim* operating an engine by the agency of water charged with a gas permanently uniform at ordinary atmospheric temperatures and pressures, and over which water has a self-acting power of absorption, when the process consists in passing a given quantity of the gas set free in charges under pressure, by heat, through the engine, actuating its piston, and thence to a closed, cool, and wet vessel; while contemporaneously therewith I cause to pass to said vessel a sufficient quantity of the said water, which had just previously held the gas absorbed, to re-absorb it—both water and gas being cooled meanwhile, by means specially provided, to an extent sufficient to cause their re-combination in the original form of gas-charged water; by all of which means the motive power of the gas is obtained, without the necessity of converting the water into steam; while, at the same time, the gas is thereby re-concentrated and preserved for re-use, without entailing an accumulation of water in the heating or separating vessel, or an accumulating pressure of free gas in the cold-receiver, all as set forth.

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No. 12,216.—JNO. A. REED.—*Improvements in Oscillating Engines.*—  
Patented January 9, 1855. (Plates, p. 121.)

Each of the trunnions *d* has a screw in its end, to tighten the valve and compensate for the wearing by the friction, should the friction in its bearings render it necessary.

The inventor says: I do not claim any of the parts of the oscillating steam-engine as my original invention; nor any of the parts of said engine by me employed to carry out and effect my said improvements, as my invention, independently of their connexion in the combination specified.

But I do *claim* as my invention and improvement on the oscillating steam-engine the arranging and placing the valves and steam-ports on each side of the cylinder and in combination therewith, so as to let the steam in both sides of the cylinder at the same time at opposite points, so that the steam from opposite points may meet in the cylinder, and so balance the pressure as to prevent that severe friction which is occasioned by letting the steam in one side only of the cylinder at a time. Also the trunnion-bearing, made adjustable to the trunnion by the set-screws, and so arranged that the conical trunnions may be accurately adapted to the conical seat, as herein set forth.

No. 12,299.—GEO. F. WOOD.—*Improvement in Oscillating Engines.*—  
Patented January 23, 1855. (Plates, p. 121.)

The changing of the position of the induction (fig. 4) and eduction (fig. 5) valves, by turning them one-sixth of a revolution, (in a direction opposite to the arrows,) will effect the reversal. The valves when they oscillate in the direction of the arrows will take steam above and exhaust from below the piston. The change of position of the valves for reversal is effected by forked lever F, which is bolted to two flanches *ff*, one on each side of the valves, so that it will move both in the same direction. The catch *h* holds the lever at the top of the circular-way G. By pulling *h* back, and moving F down until *h* catches into notch *i*, the valves describe the one-sixth of a revolution necessary for a reversal. If a notch is provided near the middle of the arc and the lever brought there, the engine will be stopped. Arc G is hinged to a lever H, which has its fulcrum at *m*, and whose other end *k* enters a notch in a piece *l*, which projects from the front of the cylinder. The oscillation of the cylinder gives a vibrating motion to H, and through a rising and falling motion to arc G, thereby oscillating the lever F and valves E and I, the valves always moving in the opposite direction to the cylinder.

The inventor says: I do not claim the induction of the steam by the oscillation of the cylinder bringing its ports at proper times into and out of communication with ports in the ends of the induction and eduction pipes, or in disks connected therewith.

But I *claim* the arrangement of the separate induction and eduction valves I E, communicating with separate induction and eduction ports and passages *p p'* through the two trunnions, and connected with the same lever F, substantially as set forth, to move simultaneously and the same distance for stopping or reversing the engine.

And I also claim transmitting an oscillating motion from the cylinder to the valve-lever F, substantially as described, for the purpose of moving the valves from their ports to meet those of the cylinder-trunnions, and thus cause a quick induction and eduction.

No. 12,726.—ABRAHAM MASSON.—*Improvement in Rotary Engines.*—  
Patented April 17, 1855. (Plates, p. 122.)

There are four cylinders C and pistons P arranged within a hub D, which hub is provided with journals M, these journals being fitted to stationary boxes. The ends of the piston work against a stationary circular guide-way F placed eccentrically in reference to the hub D. The steam enters through the steam-plate at S P. As each cylinder-base in turn passes S P, it opens a communication through aperture O, and the steam enters the cylinder. The pistons being pressed against the guide-way F, a revolving motion will be imparted to the hub. When the piston end is at 1, the steam begins to enter, and continues till 2. Between 2 and 3 the steam acts by expansion. At that time another cylinder receives steam at 1, and the first cylinder begins to discharge steam through aperture E.



Fig. 4 is an inside view of the steam-plate.

*Claim.*—The combination of the four steam-cylinders and pistons with the curved guide, arranged and operating so as to produce a continuous rotary motion, in the manner and for the purpose substantially as hereinbefore described.

No. 12,746.—JOHN J. THOMAS.—*Improvement in Rotary Engines.*—Patented April 17, 1855. (Plates, p. 122.)

Disk C is fast on shaft B, and is fitted to work in contact with two faces *f g*. The annular piston-chamber *b* is fitted with two slides *h h'*. One of these slides is always in place to form a close partition or abutment within the chamber; but each is withdrawn in its turn, (by means of cam E and rods *i*,) in a direction parallel with shaft B, to allow the piston D to pass in its revolution. The steam passing through the induction-pipe enters chamber *c*, (see arrows, figure 1,) then passes through passage *d* into chamber *b*, between the back of the piston and the closed slider *h*, and gives motion to piston and disk (see arrow, figure 2). The exhausting is effected in front of the piston through passage *c* into chamber *m*, which is always in communication with the eduction-pipe.

*Claim.*—1st. The attachment of a piston D to a disk, which forms one side of the working-cylinder or piston-chamber, and works in contact with a bearing-face *f*, on the cylinder outside of the piston, and another face *g* inside of the piston, substantially as herein-shown and described.

2d. Constructing the engine, substantially as described, with a central chamber *c* within or surrounded by the working-cylinder or piston-chamber *b*, and with another chamber *m* on the opposite side of the disk C, which carries the piston, and establishing communication between the chambers *b* and *c* by a recess *d* in the disk on one side of the piston, and between the chambers *b* and *m* by an opening through the disk on the other side of the piston; either of the said chambers *c* or *m* being the induction or suction chamber, and the other the eduction or discharge chamber, and the said chambers supplying the cylinder and receiving its discharged contents, as herein set forth.

No. 13,107.—SYLVESTER STEVENS.—*Improvement in Rotary Engines.*—Patented June 19, 1855. (Plates, p. 122.)

The nature of this improvement consists in dividing the cylinder into two separate and distinct chambers, which are separated by a revolving disk, to which are attached two pistons, one for each partition. These pistons, in lieu of being placed opposite to each other, are set a short distance apart, so as not to receive their steam at the same instant, whereby the single disk is enabled to pass the dead centre.

*Claim.*—The revolving disk D, with its valves *b b'*, operating in the manner substantially as set forth.

No. 13,550.—CHRISTIAN ERNST OFFHAUS.—*Improved Rotary Steam-Engine*.—Patented September 11, 1855. (Plates, p. 122.)

Steam being admitted into nozzle Z, the same passes through F into cylinder B and acts upon the piston-valves, turning thereby the centre piece D and shaft A, said steam escaping again after the piston-valves have moved sufficiently around and have come opposite the channel P<sup>1</sup> through said channel and passage F<sup>1</sup> to the escape-steam pipe K. Supposing that, in the position represented in the drawing, the space between the piston-valves M<sup>1</sup> and M<sup>2</sup> is filled with steam, the opening  $n^2$ , through the circumference of the plate E, will, as soon as the same has passed the abutment  $w$  in groove  $v$ , open a passage for the live steam coming from F into said groove  $v$ , through said opening  $n^2$ , the groove  $m^2$ , and through hole  $q$  to the inside of the inner half of the piston-valve M<sup>2</sup>, closing thereby, by its action upon said part of the valve, said piston-valve M<sup>2</sup> as soon as the steam escapes from the other half, after coming opposite the channel P<sup>1</sup>; and keep said valve, by its action, shut until the same has passed under the projection G, forming, in that position, an uninterrupted surface and a regular circle with the centre-piece D, as above described. When the centre-piece D has moved far enough to bring the piston-valve M and the recess T past the projection G, the live steam will enter through the passage or recess T under the centre-piece D, behind the piston-valve M. The opening  $n$ , through the circumference of the plate E, will then have passed the abutment  $w$  and come in communication with that part of groove  $v$  which is connected through passage  $q$  with the escape-steam pipe K, opening thereby a free passage through said opening  $n$ , the groove  $m$ , and the hole  $q$ , with the escape-steam pipe K, to allow the steam which was behind this part of the piston-valve M, and has by its action kept said valve shut, to escape into the steam-escape pipe, producing thereby a vacuum behind that part of the piston-valve, when the steam, which, as above mentioned, has been led behind the other part of said piston-valve through the recess T, will gradually open the same, said gradual opening of the piston-valve being regulated by spring-bar L.

When the motion of the engine is desired to be reversed, the valve U in nozzle Z is first changed, to change the entrance of the steam into the cylinder. The wheel R is then a little pulled out to bring the pin (with which it is connected to plate E<sup>1</sup>) out of its hole, and then turned round, when the wheel R, by its action upon segments  $h$ , turns the piston-valve frames so as to change the position of the piston-valves, so that the centre-piece D will be turned the reverse way around. The openings  $q^1$  through the plates  $d^1$  of the piston-valve frames will then correspond with openings leading to the grooves  $m$ , or  $m^1$ , or  $m^2$ , communicating with openings  $n$ ,  $n^1$ ,  $n^2$ , in the circumference of the plate E<sup>2</sup>, and communicating then through the groove  $v^1$  with the steam or exhaust passages, so as to allow, through those passages alternately, the steam and vacuum to act upon the inner half of the piston-valves, in the manner as above described.

I claim, 1st. The construction of the revolving piston in rotary engines, with piston-valves; said piston-valves being made to open and

abut by the action of the steam, without any extra friction against any part on the inside cylinder.

2d. I claim the arrangement of the openings and passages in the side-plates  $E E^1$ , in connection with the grooves  $V V^1$  in the cylinder, forming a communication between the inner sides of the piston-valves and the steam and exhaust passages, alternately, in the manner and for the purpose as described.

3d. I claim the construction of the piston-valves and frames, and the manner of changing the position of the same when the motion of the engines requires to be reversed.

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No. 13,763.—ELIAS MATTHESON, WALTER M. PARRIS, and HERVEY PARRIS.—*Improvements in Rotary Steam-Engines*.—Patented November 6, 1855. (Plates, p. 123.)

A is the frame-work; F the main shaft, to which are attached the different parts comprising the steam-wheel; G another shaft, to which is attached the rotary steam-abutments C, which are made to fit the bottom and sides of the annular steam-chamber I I: the abutments and steam-wheel work together in the manner of friction-rollers.  $k k$  are two annular air-chambers with openings  $b b$  and sliding-piston  $c c$ . B are cases or circles which enclose the annular steam-chambers and form their periphery,  $j j$  being an opening through which the abutments are admitted to form connection with the steam-wheel. Z are adjustable cranks which are attached to the main shaft and to the ends of steam-wheel by means of set-screws Y, with their rollers X, and fixed steam-pistons  $a a$ , on a line parallel to the main shaft. Said rollers as they revolve with the main steam-wheel are alternately brought in contact with the inner surface of the ellipses D, and give them a vibrating motion, which is communicated to the crescent-formed balance-beams V, on their fulcrums  $p p$ .

By means of the arms O, the undulating motion of the balance-beam V is communicated to the levers M, which work sliding-valves in the steam-chest I by means of rods R, such combination being to effect an adjustable cut-off. K is the main steam-pipe. S are escape-pipes. J are pipes which conduct the steam alternately to opposite sides of the abutments as the engine is reversed. H is a roller with its hand-lever L and arm N, to which are attached rods Q, that work oval slides with flanges  $i i$  that extend each side the abutments, and are so constructed as to alternately open and close the steam and escape pipes on opposite side of the abutments, as the engine is reversed by the action of the hand-lever.

The inventors say: Suppose the hand-lever L to be drawn towards you, which would close the steam-pipes J and open the escape-pipes S on the opposite side of the abutments, and close the escape-pipes and open the steam-pipes, and admit the steam on the side towards you and cause the steam-wheel to revolve in that direction by acting conjointly upon the fixed steam and sliding air-pistons  $c c$ , which are forced against confined air until the air becomes as compressed as the steam, and so passes on until the roller X on the wrist of the adjustable crank

Z comes in contact with one of the arms of the adjustable ellipses D, opposite the place of starting, and gives said ellipses a vibrating motion, which motion is communicated through the afore-described combination to the cut-off valve, and closes the same, and then as the piston moves onward in its revolution and the force of the steam in the engine becomes diminished by expansion under a cut-off, the air-spring, then having the balance power, gradually drives the steam back again into the steam-chamber, so that it is all returned before the escape takes place; thus is a reciprocal action kept up between the steam and the spring balance; then, still under a cut-off, it passes the abutment and on to the place of starting, where the steam is again let on by the action of the roller on the opposite side of the ellipses. Meantime the steam is acting on the opposite piston in the other apartment of the steam-wheel.

The inventors say: We do not wish to confine ourselves to any particular number of steam-chambers, nor to any particular number of pistons in a steam-chamber; nor do we wish to confine ourselves to slotted abutments; for we do not consider it will alter the nature of our invention, whether the pistons pass the abutments by slots in the same, or by slots in the steam-wheel.

But we *claim*, 1st, the cut-off crank Z and anti-friction roller X, in combination with the ellipse D and balance-beam V, when so constructed as to alternately open and close the cut-off valves, substantially as described, and for the purpose of effecting an adjustable cut-off.

2d. We claim the air-spring to steam-wheels, when so constructed as to have direct influence on the steam-piston, and by its reciprocal action to maintain a steady, even motion of the engine, when in unison with the cut-off, in the manner and for the purpose substantially as described.

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No. 13,786.—JOHN H. HATHAWAY.—*Improvement in Rotary Engines*.—Patented November 13, 1856. (Plates, p. 123.)

Piston D is firmly attached to shaft E, fitted to play in cylinder A, of which part C B is cut away. The piston, as well as the head F, fit steam-tight, and the latter is attached to slide G working in frame H, which is hung on the hubs of A, and has a swinging motion, governed by lever I. Steam having been admitted at V, and the head F being held in place by a cam, (not represented in the engraving,) the piston D is forced round until it arrives in position D<sup>1</sup>, when the cam above mentioned releases the head F, and another cam swings the frame H and (assisted by the steam in the cylinder) draws F out of the cylinder A, and then immediately raises it in time to allow D to pass it, when the cams throw it down again, and swing it into the cylinder ready for another charge of steam, as already described. The dotted lines F<sup>1</sup>, G<sup>1</sup>, H<sup>1</sup>, represent the position of the frame and head when swung out and elevated.

The inventor says: I do not claim the use of a circular, or nearly so, aperture in A, when the head or abutments are moved in other ways, nor the precise form or arrangements of the parts described.

But I *claim* moving the head F by means of a radial arm having its centre of motion corresponding to the centre of the shaft, so as to withdraw the head from the cylinder, before elevating it, in the manner and for the purposes set forth, or any other substantially the same.

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No. 12,179.—WARREN S. BURGESS.—*Improved Arrangement in Double-piston Steam-Engines.*—Patented January 2, 1855. (Plates, p. 123.)

By this arrangement of parts the stuffing and piston rod, (now in use,) and the guides for said rod, are dispensed with.

Of course, the steam is admitted alternately at one or the other of the outer ends of cylinder A, thus never acting upon the inner piston faces.

*Claim.*—Having two pistons B B placed within one cylinder A, the pistons being attached to rods C C, or their equivalent, so as to be a requisite distance apart; and attaching the connecting-rod E directly to the rods C, or their equivalent, substantially as herein shown, and for the purposes as herein set forth.

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No. 12,187.—JOHN SMITH.—*Improved Crank Connection in Double-piston Steam-Engines.*—Patented January 2, 1855. (Plates, p. 123.)

The inventor says: I do not claim the employment of two pistons within a cylinder separately, but I do *claim* the employment or use of two pistons B B connected by a cross-head or plate C, which has a slot D through it, in which the crank E of the shaft F fits, whereby the pistons are directly connected to the crank, and a rotary motion given the crank-shaft without the intervention of the usual piston and connecting rods, as herein shown.

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No. 12,619.—LOUIS BOLLMAN.—*Improvements in Condensers for Steam-Engines.*—Patented April 3, 1855. (Plates, p. 123.)

Supposing that the eduction of the steam from the cylinder is to commence, and that previous to the commencement there is a vacuum in the condenser A equal in value to one pound pressure per square inch. The piston E will be, at that time, forced upwards by the pressure of the atmosphere, and this force will be balanced by spring *b*, so as to hold disc-valve I stationary in position to close the entrances *e e* to injection-tubes H H. This position of the piston will be somewhat higher than the one represented in dotted lines in fig. 2. When the eduction commences and the steam begins to enter the condenser, the vacuum will be destroyed, and the atmospheric pressure will be insufficient to hold up the piston E, which will be forced downwards by spring *b* until it reaches the position represented in full lines in fig. 2, when it will be arrested by stop *c* on the piston-rod abutting against *d*. In this position the valve I opens the water passages *e e* fully to inject the water into the condenser. In a short time the pressure in the condenser will be reduced, and the atmospheric pressure will gradually force up the piston again till it closes *e e*, and so forth.

P is a small injection pipe entering eduction pipe B; Q, a small receiver below eduction passage C which leads into the condenser; S, pipe for supplying the feed or hot-water pump from the receiver. Piston E may fit and work within opening R between C and Q. When the eduction commences, (piston E being down,) the feed-water is injected through P by opening a valve-cock and closing it when a sufficient quantity has been injected. At the time of the termination of the injection of the feed-water, the temperature of the condenser will have been reduced only a few degrees, as the water is heated mostly by the latent heat. The particles of water passing along with the steam rush through R into Q. Passage R only remains open as long as there is considerable pressure in the condenser and eduction passage, as it is closed when the pressure has been reduced to a certain degree by the piston E entering passage R. (See dotted lines, fig. 2.) Thus is prevented the exposure of the heated water to the vacuum, in which it could not exist above a certain temperature without being again converted into steam.

*Claim.*—1st. The method described of controlling the injection of cold water into the condenser, by connecting the injection cock or valve with a piston E, or its equivalent, which is exposed on one side to the pressure of the atmosphere, and on the other to the pressure within the condenser, and is acted upon substantially as set forth, by variations in the pressure in the condenser, so as to increase or diminish the injection as the said pressure diminishes or increases, and to stop the injection when the desired vacuum is obtained.

2d. The employment, substantially as described, for the purpose of heating a sufficient quantity of water to supply the boiler to a higher temperature than the water delivered by the air-pump, of an additional injection pipe P, to inject the said quantity of water at the commencement of eduction into the eduction pipe or passage, the cylinder, or any convenient place near the entrance to the condenser, combined with a receiver Q, which is arranged in any way substantially as described, and furnished with any suitable means, substantially as described, of opening it at the commencement of eduction and injection to receive the said water, and of shutting it off from the condenser, before the temperature of the latter is too much reduced.

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No. 12,947.—WM. W. HUBBELL and DAVID MATTHEW.—*Improvement in Vapor Engines.*—Patented May 29, 1865. (Plates, p. 123.)

The nature of this improvement consists in evaporating the fluid by separating it into numerous small streams near the surface of the water in the boiler, and allowing it to descend from near the surface in small particles, by its weight, in contact with the flues or the different particles of hot water, and thereby become suddenly heated, and evaporate and rise in expansive vapor as power to be used in the cylinders of the engine, and from them to pass into a close condenser, where it is restored to its fluid state, and received into a reservoir containing both water and this fluid, and from this reservoir supplying the fluid to the boiler in quantities proportionate to, and governed by, the pres-

sure in the boiler, by means of a safety feed-pump, supplying the distributor in such manner that the supply, evaporation, and condensation of the fluid are made uniform and dependent on each other. The pipe A is the distributor; it is fed through  $U^1$  from receiver D, pipe U, by means of the safety-pump, (fig. 1,) which connects at U and  $U^1$  with said pipes U and  $U^1$ . B is the condenser, consisting of vertical flat tubes connected by horizontal tubes  $g$ ; in the top of each of the flat tubes is contained a jet tube  $l$ , and all the tubes  $l$  connect to the water supply pipe W. The vapor comes through X into the receiver C and condenser B, where it is condensed, and runs into receiver D, being extracted by the safety feed-pump through pipe U. The safety feed-pump regulates the supply of fluid to the boiler by having one or more properly loaded safety-valves 7 leading back to the fluid reservoir of the condenser, also having one or more feed-valves 6, operated by the pressure in the boiler. 8 is a common valve.

*Claim.*—The combination of the distributing perforated pipe or plate, the safety feed-pump, governed by the pressure, and the condenser or its equivalent, to produce a uniform supply, evaporation, and condensation or return of the fluid, substantially as described.

No. 13,019.—HENRY WEBSTER.—*Improvement in Steam-Engine Regulators.*—Patented June 5, 1855. (Plates, p. 123.)

Valve  $f$  hangs quite free, but when the governor is in operation will be forced by the escaping water into contact with the inclined piece  $j$ . The rod E, with the incline  $j$ , are so adjusted by screw  $m$ , that when the engine works at the desired speed, valve  $f$  will open just wide enough for the escape of the water pumped up to vessel C, and allow the float to remain stationary. When the velocity of the engine increases or decreases, the float D will rise (see dotted lines) or fall, and carry with it rod E, and act accordingly on the incline and the valve.

*Claim.*—In this class of regulators, controlling the escape of water by the flap-valve  $f$  and the rod E, with its inclined piece  $j$ , all applied and operating substantially as set forth.

No. 13,202.—THOMAS SILVER.—*Improvement in Marine Steam-Engine Governors.*—Patented July 3, 1855. (Plates, p. 123.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: In the arrangement of my marine-engine governor, I do not claim as a novelty the introduction of a spring, as that plan has been adopted for the purpose of collapsing or contracting centrifugal balls to the centre of a horizontal plane, in governors operating in a vertical or fixed position.

I am also aware that a single bar, with a centrifugal ball on either end, and resting at the centre, has been proposed; that the pillar or shaft on which it rests may be placed horizontally, for the purpose of transmitting more readily the motion of the engine, the principle of its action being that of ordinary governors, and having no spring.

I *claim*, in governors, the employment of two oscillating balanced bars, in combination with the spindle and spring, or any equivalent substitute therefor, in such combination, the whole being constructed and arranged as set forth.

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No. 13,415.—JOHN ARTHUR and EVAN ARTHUR.—*Improvement in Governors for Steam-Engines, &c.*—Patented August 14, 1855.—(Plates, p. 123.)

The centrifugal force acquired by the rings *a* will overcome their elasticity, and compress them, (see position represented in dotted lines in the engraving,) and thereby act upon the throttle-valve.

The inventors say: We do not claim the invention of a governor which acts by the agency of a centrifugal force, to move a slide lengthwise on a spindle, and through it to act upon the device which controls the power and speed, as the common ball governor acts on that principle;

But we *claim* a governor composed of one or more arcs, rings, or bands of elastic material, applied to a revolving spindle, with a rigid attachment to the said spindle at one point, and a loose or sliding attachment at another point, the sliding part or parts being connected with the throttle-valve, a device which controls the power or speed, the whole operating as described.

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No. 13,646.—THOMAS GOODRUM.—*Improvement in Portable Boring-Engines.*—Patented October 9, 1855. (Plates, p. 124.)

The engine carries one or more auger-stocks *c a f*, geared with its crank-shaft *D*, and receives steam from a boiler through a flexible pipe attached at *H*. The sliding-pipes enable the whole weight of the engine to be supported by the steam, so that the operator only requires to guide the auger by means of handles *E F* attached to the frame of the engine. The reason of making the sliding-pipes in more than two pieces is to have several sizes of pipe, so that one may be made to slide whose area is suitable for the working pressure of the steam, to balance, as nearly as possible, the weight of the engine.

Figs. 2 and 3 are drawn on an enlarged scale.

*Claim.*—1st. Conducting the steam to the engine through a pipe which is fitted to slide within another pipe, substantially in the manner described, whereby the weight of the engine may be supported by the pressure of the steam.

2d. The employment of two or more sliding-pipes *I I<sup>1</sup> I<sup>2</sup> I<sup>3</sup> I<sup>4</sup>*, of different sizes, and within the other, in combination with suitable clamps *L*, substantially as described, for the purpose of securing all but such one of the said pipes whose area, acted upon by the working pressure of steam, will receive an aggregate pressure about equal to the weight of the engine.



No. 13,721.—PETER HOGG.—*Improvement in Surface-Condensers for Steam-Engines.*—Patented October 30, 1855. (Plates, p. 124.)

The coils *b b b*, being separately attached to the vessel *a*, can be separately removed and replaced for repairs. The water enters through pipe *i* the rotary-pump *j*, which discharges the water into and causes it to circulate in the vessel *a* (this circulation being kept up by means of revolving paddles *l*.) The cold water thus circulates around the coils, entering at the bottom and escaping through pipe *k* at the top of the vessel as it becomes heated by extracting the heat from the coils, and thus effectually condenses the steam in the pipes. *e* leads to the air-pump.

*Claim.*—The arrangement of two or more coils or worms of pipes within a surrounding vessel, when the several coils are, in succession, coiled of a smaller diameter and placed one within the other, and each separately attached at top and bottom, in the manner essentially as and for the purpose specified.

Also, causing the condensing water which enters the surrounding vessel to travel around in the said vessel, for the purpose specified, and by means described, or any equivalent therefor, as set forth.

No. 13,748.—THOMAS DOYLE.—*Improved Arrangement of Two Beam-Engines with Parallel Shafts.*—Patented November 6, 1855. (Plates, p. 124.)

This mode of connecting the engines forms a simple arrangement for driving two shafts, to which it causes the power to be transmitted equally, if the resistance be equal, or always in proportion to the relative amount of resistance.

*Claim.*—The arrangement of two beam-engines in line with their cylinders contiguous to each other, and the connexion of the piston ends of the beams by an intermediate beam *C*, substantially as and for the purpose set forth.

No. 13,917.—JOEL W. PETTIS.—*Improvement in Packing Pistons for Steam-Engines.*—Patented December 11, 1855. (Plates, p. 121.)

*E* is a split ring applied inside the packing-rings *C*; the outer ends of the radial arms *F* fit into notches in the interior of ring *E*, and the inner ends into notches in the central bearing. By screwing up nut *b* the force exerted by the arms *F* to cause the expansion of the packing-rings will be increased, so as to compensate for their wear.

The inventor says; I do not claim the forcing out of the packing by means of radial arms within the piston, when the said arms have only a sliding rectilinear movement produced by cones at the centre, as such have heretofore been used; and I consider that arrangement inferior to, or more likely to get out of order than, and not so easily adjusted as, the arrangement of the arms to work as described.

But I *claim* the arrangement and application of the arms *F F*, substantially as described, between the packing-rings and a movable cen-

tre bearing, whether the said centre bearing be movable, to adjust or tighten the packing by means of a central rod passing through a hollow rod, or by other means.

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No. 13,934.—WILLIAM W. WADE, assignor to WILLIAM W. WADE and CHARLES BURNHAM.—*Improvement in Variable Cut-off Gear for Steam-Engines*.—Patented December 11, 1855. (Plates, p. 124.)

The form of induction-cam D is that of a circle with an abrupt offset *d*, the effect of which is to give a very sudden opening to the valve, commencing before the stroke of the piston has quite terminated, and giving a full opening to the induction port, almost at the instant the engine is on the centre. The form of cut-off cam F is substantially like that of cam D, in order to give a quick movement to the valve in closing it. The cam F is fitted loosely to a collar *g*, which is secured tightly to the shaft, and this collar has an opening *h* between it and the shaft, to receive an inclined piece *i* attached to a sliding collar H, which fits loosely to shaft G. The inclined piece *i* works in slot *k* which is made in the cam. As the shaft G revolves, its collar *g* carries round the inclined piece *i* and sliding collar to which it is attached, and the inclined piece drives the cam. As the inclined piece is pushed in or out, the cam is advanced or carried back on the shaft, and the movement of the valve to cut off the steam will take place earlier or later; and therefore, by connecting the collar H with a governor, the speed of the engine can be governed.

*Claim.*—The arrangement of the induction and cut-off cams D and F upon the parallel shafts G and E, to operate in a yoke frame containing two separate yokes C C<sup>1</sup>, one before the other, substantially as described.

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No. 13,468.—JOHN MATTHEWS, Jr.—*Improvement in Pressure-Gauges*.—Patented August 21, 1855. (Plates, p. 124.)

The tube A has offsets at one side in the form of hollow plates *b*. By forcing steam or other fluids into the tube, the effect will be to expand or press apart the horizontal portions of the offsets *b*; and thus the side of the tube where the offsets are becomes elongated, while the straight side *d* remains stationary. This elongation of one side produces a deflection of the tube, which (by a proper connexion of the upper end of the tube with an indicator) will indicate the pressure. As this tube is made by electrotyping upon a core of easily fusible material, (stearin or the like, which is to be melted when the electrotyping has been finished,) there is no solder employed in making the tube, the soldered places generally being apt to crack. The effect of expansion or contraction by changes of temperature is merely to elongate or shorten the tube without bending or deflecting it.

*Claim.*—The construction of a gauge tube, in the manner set forth; that is to say, having offsets thrown out along one side, for the purpose substantially as described.

No. 12,495.—JNO WILLIAMS.—*Improved Arrangement of Exhaust-Pipes in Locomotive Engines.*—Patented March 6, 1855. (Plates, p. 124.)

This improvement consists in creating a draught through the lower flues of the boiler, by the interposition of a curtain, consisting of two cylinders surrounding the exhaust-pipes and wings *b* placed in the smoke-arch, by which the draught is directed more perfectly through these flues; and thus a flue-draught produced in them.

*Claim.*—Surrounding the exhaust-pipes *e e* with cylinders *a* and *d*, and the outer one connected by wings *b b* with the sides of the smoke-arch, for the purpose of economizing fuel and power of the engine as well as equalizing the draught through the lower flues of the boiler, substantially as set forth.

No. 12,805 —JOHN E. WOOTTEN.—*Improved Arrangement of Means for Regulating the Discharge of Exhaust-Steam in Locomotives.*—Patented May 1, 1855. (Plates, p. 124.)

The exhaust-steam pipes B B communicate with chamber C. In this chamber slides the valve-tube *c*, which, when in its lowest position, fits with its bevelled lower edge upon the seat *d*, which projects from the bottom of the chamber. In proportion as the valve-tube is more or less elevated, the annular opening between it and the seat will be increased or diminished, and with it the force of discharge, and consequently the draught through the tubes of the locomotive.

The cylinder D communicates, as shown in fig. 3, with two hollow trunnions *f g*, on which it oscillates. The space behind the piston E communicates with the steam or water in the boiler through trunnion *f* and proper connecting-pipe. The space in front of piston E connects with the exhaust-steam chamber C through trunnion *g* and connecting-pipe. The area of piston E and of the annular section of the valve-tube *c* are so proportioned that a pressure upon one, acting through levers *h j*, will balance a corresponding pressure on the other. Thus is counteracted within the cylinder D the effect of the pressure of the exhaust-steam on the lower edge of valve *c*. The motions of the piston E elevate or depress the valve *c* by means of piston-rod *e*, levers *h j*, connecting-rod *k*, cross-beam *l*, and rods *m*. The rise of the cross-beam *l* is limited by the elasticity of the elliptical spring *n*. In this manner the pressure of steam from the boiler, acting on one side of the piston E and in combination with the elasticity of the spring, the two forces acting reciprocally on each other, regulates the position of valve *c*, and thereby the area of the discharge-passage of the exhaust-steam.

*Claim.*—The arrangement of the piston E, within the cylinder D, in communication with the steam or water space of the boiler, and with the exhaust-chamber C, in relation to the spring *n*, rods and levers and beams *h j k l m*, and valve *c*, operating as and for the purpose herein set forth.

No. 13,288.—CHAS. F. THOMAS.—*Improvement in Means for Increasing Draught in Locomotives*.—Patented July 10, 1855. (Plates, p. 125.)

The deflector T is carried backward near its periphery, as seen at *a*; the rearward curve of it constituting a reverse deflector for the purpose to deflect air through openings U into passage M, when the engine is run backwards. The openings U can be closed or opened by an annular valve-plate V, which is so connected with the butterfly-valves S S, by means of rods W, that when it is turned to close the openings U, it shall open the valves S, and *vice versa*.

The inventor says: I do not claim combining with a chimney a tube for receiving a current of air, and injecting it into the chimney in order to improve its draught; nor do I claim so combining a steam eduction-pipe with the chimney of a locomotive steam-carriage that the steam proceeding from the pipe may be caused to flow or rush into and up the chimney, so as to improve its draught; nor do I claim combining with the furnace or fireplace of a locomotive steam-engine an air-blast apparatus; nor do I claim merely arranging on the front of the chimney or flue of a locomotive steam carriage a funnel or mouth for introducing air into the flue or chimney and increasing its draught when the carriage is in motion, so as to carry the funnel or mouth against the air.

But I *claim* combining with an air-receiving mouth L (arranged on the front ends of the locomotive steam-carriage,) the chimney I, and smoke-box O, a secondary chimney K and a concentric or surrounding air-passage M, whereby, when the steam-carriage is in movement on the railway, a current of air may be caused to rush into the chimney and around and above the mouth of the secondary chimney, and so as to aid in increasing the draught through the smoke-tubes as specified.

And, in combination with the air-deflector T, the air-passage L. I claim one or more closing valves or doors to the former, a covered deflector *a*, and one or more other mouths or openings U U, and a closing contrivance or annular valve V, the same being so applied as to enable the engine, either in moving forward or backward, to cause a current of air to enter its chimney, in the manner and for the purpose as specified.

I also claim the manner in which the valve *c* is made and applied to the passage M and the secondary chimney K, in order that it may not only serve to diminish the discharging mouth of said passage, but deflect or contract the tubular current of air passing out of it, and so as to improve the draught of the same.

No. 13,270.—DAVID MATTHEW.—*Improvement in Apparatus for Heating Feed-Water to Locomotive Engines*.—Patented July 17, 1855. (Plates, p. 125.)

*c d* is the tubular heater; the heated gases in their course from the flues to the openings between the sectional cones *f* cause the heat to act directly against and around them; the exhaust-pipes *g* force the

current up through the sectional cones, causing the current to rush between each sectional cone.

*Claim.*—The arrangement of the tubular heater, sectional cones, and short exhaust-pipes, in relation to each other and to the smoke-box, as set forth.

No. 13,648.—SAMUEL L. HAY.—*Improvement in the Variable Exhaust of Locomotive Engines.*—Patented October 9, 1855. (Plates, p. 125.)

*a b* is the blast-pipe, provided with perforations *c*, and an orifice *d* in the top; it is enclosed by another pipe *f*, which is free to work up and down. The difference between the area of the orifice *e* and the inner area of the lower part of *f* will be the surface acted upon by the discharging steam to raise pipe *f*, thereby admitting a free discharge of all the surplus steam over the amount required to produce the determined amount of back-pressure; the outer end of lever *h* can be weighted so as to increase or diminish the back-pressure.

*Claim.*—The application of a self-regulating and adjustable blast-pipe to a locomotive engine, as described, or such modification of it as shall be substantially the same.

No. 13,939.—WM. E. COOPER.—*Improved Nozzle for Exhaust-Pipes of Locomotives.*—Patented December 18, 1855. (Plates, p. 125.)

The object of constructing the nozzle of an exterior cone A, and interior cylinder B, is to afford sufficient space at the base to receive freely all the steam entering through the pipes *c d*, and distribute it equally to all its parts, and at the same time to allow its escape only through a narrow circular opening *a b*, extending around its top.

The inventor says: I am aware that in the various multiplied forms of exhaust-nozzles, the steam of escaping vapor has been already formed into various shapes; one of which is, in effect, a ring, a conical plug being fitted in the orifice to regulate the area of the opening by varying its position; but none of these have been with the intent, nor have they produced the effect of mine, inasmuch as the blast has never been efficient, except on its outer surface.

I *claim* the blast-nozzle described, which forms the escaping steam into a circle, or its equivalent, and permits the products of combustion to pass up both sides of the annular steam-track or current, as set forth.

No. 13,145.—JOS. HENRY TUCK.—*Improvements in Packing for Stuffing-Boxes, &c.*—Patented June 26, 1855. (Plates, p. 125.)

This packing is made of canvass, saturated with India-rubber. The canvass is then cut, in a diagonal manner, into strips of required width; the diagonal ends are cemented together so as to form any length of fillet required; then it is rolled up into a roll and allowed to cement in a firm but elastic or flexible roll. Where greater elasticity is required, the canvass is to be rolled around an India-rubber core. Figure 1 repre-

sents a cylindrical packing; figure 2 is another manner of rolling up packing to be used in conical seats; figure 3 represents packing rolled around a core *a*.

*Claim.*—The forming of packing for pistons or stuffing-boxes of steam-engines, and for like purposes, out of saturated canvass, so cut that the thread or warp shall run in a diagonal direction from the line or centre of the roll of packing, and rolled into form either in connection with the India-rubber core or other elastic material, or without, as set forth.

No. 12,829.—GILBERT RICHARDS.—*Improvement in Spark-Arresters.*—  
Patented May 8, 1855. (Plates, p. 125.)

The sparks, as they are carried upward by the draught, will be thrown by the deflecting-plates D into the angular recesses *a*, formed by the flanch B, the sparks having a tendency to pass therein, owing to their momentum, while the smoke will pass around the edge of the plates D, and ascend through the centre of the casing A.

*Claim.*—The spiral flanch B and deflecting-plates D, arranged as herein shown, and for the purpose as set forth.

No. 12,865.—DAVID MATTHEW.—*Improvement in Spark-Arresters.*—  
Patented May 15, 1855. (Plates, p. 125.)

The chimney-tube R, extended into the smoke-box, comes down directly over the exhaust-pipes; by its position near the bottom of the box, and by the current caused by the exhaust, the heavier sparks are to be drawn up that would otherwise be left in the smoke-box in an ignited state, and injure it, and obstruct the lower flues. An open annular space is left between the base of chimney I and the top of tube R; and the exhaust-pipes do not pass through the sides of this tube, to discharge into it, as this would obstruct the draught, but present their mouth to its lower end.

*Claim.*—The annular space between the base of the smoke-pipe I and the section R, extending down into the smoke-box A, with the exhaust-pipes D underneath, arranged as and for the purposes herein set forth.

No. 12,915.—DAVID MATTHEW.—*Improvements in Spark-Arresters.*—  
Patented May 22, 1855. (Plates, p. 125.)

A is the separating-cone, K the saddle-pipe, N the spark-arrester, O the case, and P the chimney. The V cavities form entrances to the openings *m*, which are at the upper points of these cavities; an iron plate closes the top; the lower part of the cone sits in the saddle-pipe, which receives the sparks, and conducts them off. When the current of smoke, sparks, &c., is thrown against the cone by the force of the exhaust-steam in the chimney, and strikes into the V cavities, the sparks pass through the openings *m*, striking the top plate, and falling

back into the cavities on the inside, which conducts them down, while the smoke and gases pass off.

*Claim.*—The separating head or cone, having the surface that is exposed to the current from the chimney formed of V cavities, or projections and openings, for the purpose of separating the sparks from the current of gases.

Also, the saddle-pipe, for the purpose of supporting the head, and conducting the current of sparks and gases through it, substantially as herein shown and described.

No. 13,216.—DANIEL DESHON, 2d.—*Improvement in Spark-Arresters.*  
—Patented July 10, 1855. (Plates, p. 125.)

The deflector or plate J serves to give the proper direction to the current of steam as it escapes; the further the plate J is run down from its highest position, the more the current of steam will be thrown towards the sides of the stack (the engraving represents the plate in about its lowest position). The grating D, for arresting the sparks, is placed on the side of the stack, thus leaving the top of it clear from obstructions to the draught.

*Claim.*—The arrangement of the deflector at the base of the pipe, and the curved flange C at the top, and the gauge or grating D at the side, as and for the purpose set forth.

No. 12,355.—WILLIAM MT. STORM.—*Improvement in Steam-Generators.*  
—Patented February 6, 1855. (Plates, p. 125.)

The thermostat consists of two horizontal zinc straps J<sup>1</sup>, connected at their middle by a vertical zinc strap J<sup>1</sup>, and riveted at their ends to a rectangular iron case H<sup>1</sup>, into which the steam enters at A<sup>1</sup> directly from the boiler, and through which it passes to the superheater by means of pipe B<sup>1</sup>. The difference between the expansion of the iron case and the zinc straps will actuate the rod K<sup>1</sup> and cock C<sup>1</sup>.

By partially opening cock P<sup>1</sup> when the desiccator is likely to become overheated, water from the boiler will enter into the desiccator, according to the extent to which the cock P<sup>1</sup> is open, and forming steam will take up any excess of heat beyond that due to the pressure of the steam, if the supply of water allowed to enter is sufficient; but if limited, any desired excess of heat or superheat may be retained. If the desiccator were allowed to fill, the water could not rise above the level of pipe B<sup>1</sup>, where it enters the desiccator; for, if it should, the steam formed in the latter, being confined, would promptly become of greater pressure than that in the boiler, and press the water out, till it could itself escape by B<sup>1</sup> to the main steam-dome.

*Claim.*—1st. Enclosing a thermostat in a steam-tight space, forming a part of the steam-conducting passage to the engine, and from such thermostat forming an exterior and adjustable connection to a cock or valve, as C<sup>1</sup>, located in the exit-pipe of the boiler in such manner that, being moved by the thermostat, it shall direct more or less of the steam

through the superheater; the whole device, by acting in conjunction, thus controlling, while being actuated by, the temperature of the steam going to the engine.

2d. Regulating and tempering the heat in the desiccator, by the admission to it, as may be necessary, of water from the boiler, by means of an especial communication, as pipe O<sup>1</sup>, the quantity admitted being governable by the adjustment of a cock, as P<sup>1</sup>, all substantially as explained.

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No. 12,682.—ALEXANDER B. LATTA.—*Improvement in Steam-Generators.*  
—Patented April 10, 1855. (Plates, p. 125.)

E is the water-jacket, A A the coil, the ends C C of which pass, turn down, and connect immediately with the upper part of the water-jacket. The lower ends F F of the coil, coming through the water-jacket, connect with the pumping-engine, which receives the water from an open vessel, which is supplied with water from the reservoir through a pipe provided with a cock, to regulate the quantity of water as it goes into the pumps. The pump can be disconnected from the engine, to be worked by hand. The open water-vessel, or any equivalent, is to enable the engineer to see the water as it is going in. By means of gauge-cocks N N, the engineer ascertains whether or not the water is all converted into steam. D is the safety-valve. Gauge-cocks G G, in the water-jacket, serve to determine when an excess is coming over, by the water rising in it. In commencing the generation of steam, there should be no water in the coil; the fire being lighted, and burning briskly, the engineer commences to work the pumps by hand, and injects water into the coil, which, by this time, has become hot enough to generate steam. As soon as sufficient steam has been generated to fill the steam-chamber, the hand-pumping ceases, and the pumps are connected with the engine.

*Claim.*—1st. Combining a steam generator or boiler, consisting of a coil of tube, with a furnace, in such manner that the flame, or products of combustion, shall come in immediate contact with said coil, when this coil is combined with a feed-apparatus and gauges, which will enable the engineer to inspect constantly the supply of water, see that it is not interrupted, test its sufficiency, and regulate it at pleasure, according to the varying demands of the boiler, or close the dampers, if the feed should be interrupted, substantially as described.

2d. While confining the admission of water to the receiving end of a coiled tube boiler, limiting the quantity therein, and the supply thereof, to the quantity demanded for immediate conversion into steam, for the purpose of avoiding the weight of a large quantity of water; producing steam promptly, saving fuel, and preventing the water from being thrown out of the tubes by the steam formed in the lower part thereof, substantially as described.

3d. Causing the discharging end of a coiled tube generator to communicate with and discharge itself into the water-jacket, while all other communication of said coil with said water-jacket is avoided, as described.



No. 13,563.—ALBERT BISBEE.—*Improvement in Steam-Gauge Cocks*.—Patented September 18, 1855. (Plates, p. 125.)

The outer end of the body A of the gauge-cock has a screw-thread cut in it for the male screw of the stopper C to fit and work into; this recessed portion of the body is extended beyond the stopper-seat F, so as to form an annular space I, surrounding an annular projection H, composing the stopper-seat portion of the body, the outlet aperture B running centrally of the body from its inner end to the stopper-seat surface F. E is an India-rubber disk.

I *claim* the arrangement, substantially as specified, of the India-rubber disk, or facing, to the screw-plug or stopper, imbedded and bound at its edges by an extension of the body of the plug, as described, with the stationary annular stopper-seat of the cock, essentially as set forth.

No. 13,652.—GEORGE M. LONGACRE.—*Improvement in Economizing Steam*.—Patented October 9, 1855. (Plates, p. 126.)

The steam is generated in boilers *a*, and passes at high pressure under the evaporators *b*, and from thence to the second set of boilers *c*, which furnish the steam for the engine.

The advantages of this system, the inventor states, are, first, that the surplus heat is taken up by the second boiler before the gases from the fire pass to the chimney; secondly, the greater pressure in the first set of boilers entirely dispenses with the necessity of a pump to keep up the circulation from the first into the second; thirdly, a less surface of pans and length of pipe will answer to produce a given amount of evaporation, as the temperature of the boiling steam is higher than by any other plan.

*Claim*.—The employment of two sets of boilers, in the manner and for the purposes described, having steam of different pressure and temperature therein, and passing the steam from the boiler of the highest pressure through the pipes of the evaporators, &c., to the other boiler, from whence it is used to move the machinery of the mill.

No. 13,711.—JOS. WOODRUFF.—*Improvement in Elastic Diaphragm Steam-Pressure Regulators*.—Patented October 23, 1855. (Plates, p. 126.)

The piston F, which is acted upon by diaphragm D, has a smaller diameter than the inner periphery of curb E, and is guided in its central position by chains H, attached with one end to the piston and with the other to the curb. The steam enters at *c*.

The inventor says: I do not claim the convex or cup-edged piston, as it may have been used before; but I *claim* the chains H, as arranged in relation to the cupped-edge or convex surface of the piston, for controlling and guiding the piston, and keeping it in its central position without coming in contact with any substance to cause friction when operated upon by the diaphragm, as set forth.

No. 12,203.—GEORGE W. HUBBARD and WILLIAM E. CONANT.—*Improvement in Operating Slide-Valves in Direct-action Engines.*—Patented January 9, 1855. (Plates, p. 126.)

Supposing the steam-port *m* of the engine to be open, and piston *B* to have so nearly finished its stroke to the right, that the tappet-arm *b* is just coming in contact with the tappet *a*<sup>1</sup> to move the valve to effect the reversal, (as represented in figure 1,) then the ports *i* <sup>2</sup> of the small cylinder are closed, and so have been from the commencement of the stroke of *B*. *B* will continue its motion until it brings valve *E* to a central position over the ports, when, both steam-ports being closed, the motion of the piston ceases, and (the direct-action engine having no fly-wheel) the motion of the valve *E* would cease also, but that during the above motion of the piston *B*, the valve-rod *F* moves the small valve *h*, and opens the port *i* to admit steam to the small cylinder *g*, to act on piston *f*, for the purpose of driving the valve *E* to the end of its stroke, and opening port *m*<sup>1</sup> for reversal, as shown in figure 2. During the greater portion of that part of the movement of the valve *E* produced by the piston *f*, the valve-rod *F* and valve *h* are stationary as the projection or hook *d* on the rod is moving from end to end of the recess *c*; but just before the stroke of valve *E* is completed, the end of the recess comes in contact with the said projection or hook, and the remainder of the stroke causes the valve *h* to be moved far enough for its passage *k* to be closed by the cut-off *j*, and the movement of the valve *E* ceases. The ports *i* <sup>1</sup> of the cylinder *g* remain closed, and the valve *E* stationary, and all the valve gear in the condition represented in figure 2, until the engine piston in its movement to the left brings the tappet-arm into contact with the tappet *a*, when the valve *E* is operated in a manner the reverse of that above described.

*Claim.*—Connecting the slide-valve *E* and its tappet-rod *F* in such a way as to allow either a certain amount of motion independently or the other, and combining them with a steam cylinder *g*, piston *f*, slide-valve *h*, and cut-off *j*, so as to operate substantially in the manner herein described.

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No. 12,207.—WILLIAM CLEVELAND HICKS.—*Improved Arrangement of Slide-Valve and Exhaust-Passages in Steam-Engines.*—Patented January 9, 1855. (Plates, p. 126.)

The engraving plainly illustrates the nature of this improvement.

*Claim.*—The producing (by one slide-valve and valve seat) of two or more exhaust-passages from each end of the cylinder for each induction or steam-port, substantially as in the manner described.

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No. 12,399.—JOHN TREMPER.—*Improvement in Steam-Valves.*—Patented February 13, 1855. (Plates, p. 126.)

*Claim.*—1st. The valve composed of a ring, without ports or passages in its sides, applied substantially as described within a casing containing a fixed head or cup *b*, and a passage or passages *d*, leading from one side to the other of the said fixed head or cup.

2d. The guard-ring C applied substantially as described, either with or without the lip i, for the purpose of protecting the inlet side, or end of the valve, against the percussive effect of the rush of steam or other fluid, at the commencement of the stroke of the engine. (See engraving.)

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No. 12,507.—NOBLE T. GREENE.—*Improvements in Cut-off Valves for Steam-Engines*.—Patented March 14, 1855. (Plates, p. 126.)

*a a* are the two slide-valves, connected by rods *b* with rocking-levers *c*, on arbors *d*; the arbors have cranks *e*, which are weighted by means of weights *f*, to close the valves when the levers are liberated. Bar *g*, which receives a reciprocating motion from any suitable part of the machine, is guided between standards *h*, and tappets *j* slide in vertical mortises in said bar; the tappets are constantly forced up (by means of spring *l*) against the lower edge of gauge-bar *m*; shoulders *k* on said tappets determine the limit of their motion downward. The gauge-bar *m* has a stem *n*, sliding in a standard *o*, and can be either set at desired heights by means of a set-screw, or it can be connected with the governor, in order to regulate the height to which the tappets may be forced up by the spring, which will determine the period of closing the valves.

*Claim*.—Combining with the rocking-levers, or their equivalents, for operating the valves, the spring-tappets on the sliding-bars, substantially as described and for the purpose specified.

Also, in combination with the sliding spring-tappets, that operate the rock-levers, substantially as described, the employment of the gauge-bar or any equivalent therefor, to regulate the period of closing the valve, whether the said gauge-bar be regulated by a governor or by other means, as set forth.

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No. 12,564.—H. UHRY and H. A. LUTTGENS.—*Improvements in Valve-Gearing for Steam-Engines*.—Patented March 20, 1855. (Plates, p. 127.)

The differential rocker G is hung upon a spindle *n*, parallel to the main rocker shaft O, and the spindle is stationary within two arms *l k* of the same, while the differential rocker turns freely upon it; the latter is provided with two arms, one F *o* forming a quadrant arm, which holds a sliding-block (not represented in the engraving) operated by an eccentric; the extremity of the other arm *o* forms a joint to receive a valve-rod operating the exhaust-valve, the motion of which is mainly due to the motion of the main rocker, which is connected to the stationary or shifting-link motion, but is modified and regulated by the position of the block within the quadrant-arm of the differential rocker. The eccentric which operates the quadrant-arm of the differential rocker is fitted and fastened upon the crank-shaft, besides the two eccentrics which operate the ordinary-link motion, all three having in this case the same amount of throw; the throw of the additional eccentric may, however, be varied as deemed proper. The eccentric

near its extremity is secured by a pin to a block, which latter is fitted so as to slide freely within the slot of the quadrant-rocker arm; the end of the eccentric rod is fastened by a pin to a connecting piece, which forms a link between the former and the reversing lever, the fulcrum of which has its bearing in a part of the framing of the engine. The second arm of this lever, forming an angle of about ninety degrees with the former, has secured to its end the reversing rod, which latter may be secured at its other extremity to an ordinary reversing lever.

The main valve  $C^1$ , or the one operated upon by the ordinary link-motion, is a solid plate without cavities, and its seat is provided with two steam-ports  $e^1$  and  $f^1$ , by which the steam enters passages leading to the ends of the cylinder. The second valve  $d^1$ , or the one operated upon by the differential rocker, is supplied with the exhaust-cavity  $h^1$ ; its seat has two steam-ports  $i^1$  and  $g^1$ , and one exhaust-port  $h^1$ ; the steam-ports opening into the same passages which lead to the ends of the cylinder, these passages being properly extended so as to meet their respective steam-ports. The valve-seats are made of a W shape, each V forming a seat for one of the two valves.

The first-mentioned valve, operated by the ordinary-link motion, fulfils the offices of distributing the steam to the cylinder, supplying outside lead, and cutting off the steam in proportion to the decrease of travel; the other valve exhausts the steam, while, at the same time, it opens and cuts off the admission of steam near full stroke of the piston.

A description of the operation of this mechanism would occupy too much space.

The inventors say: We do not desire to confine our claim to any precise manner of construction or application of the improvement, as, from its capacity of being applied to steam-engines of different designs and purposes, its adaptation may, as already stated, call for modifications of parts connected with the improvement.

But we claim the differential rocker G, operated substantially as described, in connexion with the stationary or shifting link motion, for the purposes of increasing the opening of the steam-ports at the higher grades of expansion, and retarding and varying the time of exhaust, without incurring early compression attending increase of inside-lap on an ordinary valve.

We also claim the duplicate valve-seats  $B^2$  and  $B^1$  being arranged parallel to each other, provided with steam-ports  $f^1$   $e^1$   $i^1$   $g^1$ , and an exhaust-port  $h^1$ ; the two steam-ports  $g^1$  and  $e^1$  towards the front of the cylinder, joining in the passage  $J^1$ , lead the steam to that end of the cylinder; the other two steam-ports  $i^1$  and  $f^1$  leading the steam into one passage  $K^1$  towards the back end of the cylinder.

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No. 12,592.—WM. H. GUILD and W. F. GARRISON.—*Improvement in Operating Valves in Direct-acting Steam-Engines.*—Patented March 27, 1866. (Plates, p. 127.)

The operation of this valve will be understood from the engravings. The inventors say: We do not confine ourselves to the particular

form of the valve, or arrangement of the ports, further than is necessary to the within described operation.

We *claim* giving to the valve the whole or part of the movement necessary to effect the change in the direction of the engine-piston, by means of the steam acting upon a piston E, which is arranged and applied to work perpendicularly to the valve within a cylinder D attached to a cap fitted to the back of the valve, and is supported against the pressure of the steam by a rocker e, or its equivalent, by which it is caused to operate, substantially as set forth.

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No. 12,624.—THOS. GOODRUM.—*Improvements in Valves for Steam Engines.*—Patented April 3, 1855. (Plates, p. 127.)

The operation of this valve will be understood by reference to figures 2 and 3, both of which represent the valve in the same position; one figure showing its relation to the ports *a a* at one end of the casing, and the other figure its relation to the ports *a<sup>1</sup> a<sup>1</sup>* at the opposite end, at the same time. The cut-off is there supposed to be adjusted to cut off at about half-stroke. The right-hand engine is supposed to be just passing the centre; the left-hand one to be at half-stroke. The valve makes one revolution in the direction of the arrows for every revolution of the engine-shaft. The bearing *i* of the valve is just passing the port *a* of the right-hand cylinder, and commencing to admit steam from the interior of the valve through the opening, while the bearing *g<sup>1</sup>* is just opening the opposite port *a<sup>1</sup>* of the same cylinder to the exhaust. The port *a* of the left-hand cylinder, which has been receiving steam, is just being closed by the plate *p*, while the opposite port *a<sup>1</sup>* is full open to the exhaust-cavity *e<sup>1</sup>*. The time of cutting-off can be varied. The dotted lines in figures 2 and 3 represent a position where the cutting off will take place later than in the position represented in full lines; *k* is the induction, *g* the eduction pipe.

The inventor says: 1st. Though I do not claim to be the first inventor of rotating tubular valves for the induction and eduction of the steam, I *claim* the rotary tubular valve having openings and cavities, arranged substantially as described, to communicate with the induction, and with one, two, or more openings or ports *a* leading to one end, and a corresponding number of ports *a<sup>1</sup>* leading to the opposite end of one, two, or more cylinders, whereby the same valve is enabled to control the induction and eduction of steam to both ends of one, two, or more cylinders.

2d. I claim the variable cut-off, consisting of two segments of cylinders *o* and *o<sup>1</sup>*, and plates *p p<sup>1</sup>*, applied within the tubular valve, substantially as described.

3d. I claim arranging the valve-casing and the tubular valve with the axis of the valve in line with the cylinder or cylinders, as described, so as to bring the valve into an equally convenient position relatively to two or more cylinders, and enable the length of the passages leading from it to the cylinders to be reduced to the greatest possible degree.

No. 12,729.—JOHN B. SCHENCK.—*Improvements in Cut-off Valve-Gear.*—  
Patented April 17, 1855. (Plates, p. 128.)

Cam B is firmly secured to crank-shaft A ; cam B<sup>1</sup> is movable upon shaft A ; both cams have grooves *a* precisely similar. Cam B<sup>1</sup> operates the cut-off valves. *b b<sup>1</sup>* are loose sleeves upon a fixed shaft C. The ends of arms *e* and *e<sup>1</sup>* are connected by a lever *f*, to which is attached valve-rod *g*. Figs. 3 illustrate the operation of these parts. The time of cutting off the steam can be varied by moving cam B<sup>1</sup> on the shaft, so that it may act sooner or later after cam B ; worm-wheel *j* is cast with the cam B<sup>1</sup> ; the endless screw *k* is supported in bearings *l l* attached to cam B, and gears with the worm-wheel *j* ; the screw carries a bevel-wheel *m*, which gears with bevel-wheel *n* on arbor *x* of a finger-wheel *o*, said arbor turning freely in a bearing near the periphery of the cam. This finger-wheel in revolving with the cam passes during every revolution between two pins *p* and *p<sup>1</sup>* attached to an arm *q*, which rocks on a stationary fixed pivot *r*. This arm is connected by rod *s* with a governor. While the engine is going at the proper speed, the governor holds the arm in such a position that the finger-wheel passes between the pins *p* and *p<sup>1</sup>* without touching them, and therefore the relative positions of the cams are not changed ; but if the engine goes too fast or too slow, it draws the arm in such a direction that one of the pins will be struck by the fingers of the wheel and move the wheel, bevel-gear, screw, and worm-wheel in the proper direction to either advance or retard cam B<sup>1</sup>, and thus cause it to act sooner or later after cam B, and thereby cut off earlier or later. In order that the tendency to increase the speed of the engine may not cause the cam B<sup>1</sup> to be moved farther back than is necessary to allow the valve to remain open full stroke, the bevel-gear *n* is not secured fixedly to the arbor of wheel *o*, but is only attached by means of two spring-pawls *t t<sup>1</sup>* and ratchet teeth *u u<sup>1</sup>*. Pawl *t* is made with a tail *w*, which, when cam B<sup>1</sup> is moved back as far as desirable, comes in contact with a stud *v* secured to cam B<sup>1</sup>, thereby disengaging the pawl from the tooth, so as to allow the finger-wheel and arbor to rotate without the bevel-wheel.

The inventor says : I do not of themselves claim the employment of two cams or eccentrics applied to a single slide-valve, the one to open the steam ports, and the other to close them to cut off the steam ; neither do I claim making one of the said cams or eccentrics movable for the purpose of varying the cut-off.

But I claim : 1st. Connecting the slide-valve with a lever *f*, which is also connected at different points with two arms *e e<sup>1</sup>* of unequal length, working side by side, and receiving motion substantially as herein described from separate cams on the crank-shaft of the engine, or some other shaft having a corresponding motion therewith, the whole operating to give the valve a double movement, as herein set forth.

2d. Effecting the connexion between the finger-wheel *o* and the bevel-wheel *n*, or its equivalent, through which the said finger-wheel transmits the movements of the governor to the cut-off cam B<sup>1</sup>, by means of pawls *t t<sup>1</sup>* acting upon ratchet-teeth *u* ; and providing a stud or stop *v* on

the opposite cam to that which carries the finger-wheel, for the purpose, when the cut-off cam arrives in position to give full steam for the whole stroke of the piston, of liberating the pawl by which the motion is transmitted in the direction for retarding the operation of the cut-off cam, and thereby rendering it inoperative, substantially as herein described.

No. 12,873.—JOHN A. REED.—*Improvement in Steam-Engine Valves.*—Patented May 15, 1855. (Plates, p. 128.)

One face  $a^2$  of the valves, when removed from its seat, forms the communication between the cylinder and the exhaust passage  $t$ ; the other face  $a^1$ , when withdrawn from its seat, forms the communication with the steam passage  $r$ .

*Claim.*—Bevelling the edges of the cylindrical valve  $z$ , or its equivalent, and bevelling the edges of the steam-ports  $s$   $t$ , whereby I am enabled to move the valves within the ports; the bevelled edges of the ports thus being valve-seats, and the bevelled edges of the valves being faces to fit thereto, as herein set forth.

No. 12,904.—MARCUS D. DU BOIS.—*Improvements in Valve-Gear for Oscillating Engines.*—Patented May 22, 1855. (Plates, p. 128.)

The rock-shaft E passes transversely through the steam-chest, which, by means of a toothed segment F and rack, operates the valve; outside the steam-chest it carries the three-armed lever  $c$   $d$   $d^1$ , so arranged that the continuation of the central line of arms  $c$  bisects the angle formed by  $d$  and  $d^1$ . It also carries another three-armed lever  $e$   $f$   $f^1$ , arranged as shown in the figures. The stud  $g$  projects from a sliding piece H, which slides in ways on standard G. The cylinder A oscillates on trunnions T. Suppose the piston to be moving in the direction of the arrow, but the engine to be on the centre and about to take steam at the left-hand end of the cylinder, the arm  $c$  is then in the position of figure 3 on the right-hand side of stud  $g$ , and the oscillation of the cylinder causes the arm  $c$  to turn the shaft E and segment, and move the valve to open port  $a$ . The arm  $c$  then passes over the stud. As the cylinder terminates its oscillation, the arm  $f$  is caught by the spring-catch  $h$ , so that, as the cylinder returns towards a central position, the catch acts upon  $f$  to move the valve to close the ports, after which the arm  $f$  works clear of the catch. Figure 2 represents the ports just closed, and the arm  $f$  just leaving the catch. The engine is now nearly on its centre, and arm  $c$  is just coming into contact with the left-hand side of stud  $g$  to move the valve to open port  $a^1$ . When the valve has a short stroke, and the valve is not moved far enough by stud  $g$  to bring arm  $f$  or  $f^1$  in position to be caught by  $h$  or  $h^1$ , the catching will be insured by the arm  $d$  or  $d^1$  on the same side, striking against  $i$  or  $i^1$  and throwing the arm over the catch. The length of stroke can be varied by raising or lowering sliding-pieces H and stud  $g$ .

*Claim.*—1st. Furnishing the rock-shaft E, by which motion is to be given to the valve, or valves, with three arms  $c$   $f$   $f^1$ , arranged substan-

tially as described, so that the arm *c* will be brought, by the oscillation of the cylinder, into contact with a fixed stud *g*, and thereby be caused to give a movement to the valve to open the ports, and that the arms *f f*<sup>1</sup> will alternately be brought, by the same means, into contact with fixed spring-catches *h h*<sup>1</sup>, for the purpose of giving the valve a movement to close the ports, as herein fully set forth.

2d. Furnishing the rock-shaft with two arms *d d*<sup>1</sup>, arranged substantially as described, to strike two fixed pieces *i i*<sup>1</sup>, when necessary to throw the arms *f f*<sup>1</sup> into a position to be caught by the spring-catches *h h*<sup>1</sup>, for the purpose of moving the valve to close the ports.

No. 12,966.—DAVID STODDART.—*Improvement in Cut-Off Valves*.—Patented May 29, 1855. (Plates, p. 128.)

The steam connexion from the boiler to the engine being opened, the main piston commences its stroke, and continues till it passes the hole O midway in the cylinder connecting to the space under P; then the steam behind the piston rushes through the connecting-pipe, and, acting on disk P, closes the valve, while the main piston continues to the end of the stroke; the steam behind it, and also under P, by reason of expansion, being gradually reduced to nearly one-half its initial pressure. But if the area of P is sufficiently large, the reduced pressure will still hold the valve shut until the engine exhausts, when the steam under P will rush back again to the cylinder, leaving unbalanced the pressure of steam above the cut-off valve exerted on its face; and hence the cut-off valve opens to give the engine steam for the return stroke, when the like operation is again performed. X represents part of the cylinder.

*Claim*.—So arranging the disk P, connected with the cut-off valve, and in relation to the space below P, connecting it by a passage to the cylinder, that the cut-off valve will be operated by steam from the cylinder, as set forth.

No. 13,128.—CHAS. S. HARRIS.—*Balance-Valve*.—Patented June 26, 1855. (Plates, p. 128.)

*Claim*.—The combination of two valve-surfaces C C acting on the two feather-edged valve-seats E E, one inside and the other outside the casing or box, in such a manner that the pressure in one direction on one is compensated by an equal pressure in an opposite direction on the other, so that the valve will remain in a state of rest without being affected by any pressure, whether on the inside or outside of the casing or box.

No. 13,276.—JNO. B. STOTT and ALEXR. FERGUSON.—*Improvement in Cross-head Attachment for Working Steam-Engine Valves*.—Patented July 17, 1855. (Plates, p. 128.)

When the inclined end of bar X reaches the cam M<sup>1</sup>, it presses the latter aside, moving arm K, shaft J, lever H, and valve-rod G, a little from right to left, and operating the valve so as to close the steam-



passage. The continued expansion of steam moves the piston on until the edge of T touches  $M^1$ , which it moves a little further back, and thereby gives the valve a further motion, slightly opening the steam-passage. At the same time that the vertical face of  $M^1$  presses against the face of T, the projecting lip overlying the upper oblique surface of T slides over it, raising  $M^1$  vertically against its spiral spring until it reaches the recess V, when it drops into it just at the close of the piston-stroke. The operation of the parts is similar during the backward stroke of the piston.

The two plates T are connected by a right and left handed screw, which can be operated by thumb-screw Y, thereby bringing the two plates nearer together or further apart, and thus regulating the time for cutting off steam.

*Claim.*—The method of operating the valves of steam-cylinders by the process described, to wit: By a series of trips attached to and sliding with the cross-head of the piston, which trips operate in succession upon the arms of a vibrating shaft, connected with the valve-rod through cams fixed near the ends of the arms: the trips themselves consisting of a variable and adjustable one to move the valves so as to cut off the steam before the end of the piston's stroke, leaving the eduction passage slightly open; a second to shift the valves a little further, at the end of the stroke, so as to take steam for the new stroke and open wider the eduction passage; and a third to shift the valves so as to open the induction and eduction passages to their fullest extent. The two first movements of the valve being made by the movement of the cross-head in one direction, and the other by the reverse movement thereof, the last operation being produced by the joint action of the spring-cam on the arm K and the recessed trip V, substantially as set forth.

No. 13,328.—CHARLES A. WILSON.—*Improvement in Oscillating Valves and Gearing for Pumping-Engines.*—Patented July 24, 1855. (Plates, p. 129.)

Y is a cushion piston; M M, hollow spaces filled with steam and forming a jacket for the valve; L, exhaust-pipe; J, cylindrical steam-chamber, with opening *a a* into the steam-pipe; *m*, two valve-ports opposite each other, both of the same size and shape as the equal ports  $H^3$ ,  $H^4$ ,  $F^3$ , and  $F^4$  in the valve-seat, and one-half the area of H and F,  $H^2$  and  $F^2$ , in the bottom of the seat; K, exhaust-space; *c c*, two lugs on the end of the valve extending near the front or right-hand side of trip-lever Q, embracing tightly the safety-arm O, and so regulated as to admit the necessary play of the trip-lever, which, striking against them alternately in its descent, opens the valve-ports by turning the oscillating valve; figure 2, underside view of the valve-tripping apparatus; *r r*, set-screws in  $L^2 L^2$  for regulating nicely the time when the cams begin to act on the safety-arm, for the purpose of cutting off the steam at any desirable period before the trip-lever in its returning motion, passing the vertical plane through its axis, falls and knocks open the valve-ports for the opposite end of the cylinder.

The inventor says: I do not claim producing an equilibrium of pressure on the interior surface of the oscillating valve: that has been more or less perfectly accomplished by many before me, and probably by that of Mr. Wright, of Rome, New York, and by Bloomfield's patents of A. D. 1854. But I have, as I believe, effected what has never before been accomplished in balancing all pressures, both interior and exterior, on the oscillating valve, arising from steam at the boiler tension, expanding or exhausting; while at the same time I have relieved it from all weight of working-gear, so that it has nothing to impede its motion or cause wear in its chamber, except the friction developed by the pressure required on N, figure 4, to produce a steam-tight joint and its own weight.

*I claim:* 1st. Balancing oscillating valves under all lateral pressures on the exterior arising from steam or air, and regulating the exhaust-ports as described.

2d. Balancing the end pressure in the interior, caused by steam in conical valves V, by the annular recesses *b b*, equal and opposite to *a a*, and the balance-piston N, or steam-valve on a bevelled seat, as described.

3d. Supporting the tripping apparatus, consisting of the angle R, trip-lever B, toggle-joint T, and upper lever S, or their equivalents, so as to relieve the valve from all weight, and consequent friction and wear, as described.

4th. Using the safety-arm O to insure and regulate the cut-off, and the cam-jogs  $L^2 L^2$  of depth regulated by cutting set-screws *r*, or other equivalent devices for operating the same, as set forth.

5th. Using the independent rod A B attached to the piston of the steam-cylinder for working the valve-gear, whereby, bringing the steam-cylinder and pump close to each other, space is economized while power is gained, as has been described.

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No. 13,359.—FREDERICK PERRY.—*Improvement in Cut-off Valves for Steam-Engines.*—Patented July 31, 1855. (Plates, p. 130.)

This valve is pressed to its seat by the steam. B is the main valve; C C the detached cut-off valves, having double ports to match those in the main valve and stops *b*; D D are the expansion and contraction plates for graduating the movement of the cut-off valves, and have stops *c* to match those on the cut-off valve; they are connected with suitable links J to the eccentric wheels *g* attached to the shaft *h*; *a a* are two small sunk channels, in the top face of the main valve, over which channels the cut-off valves are placed, constantly covering them. The valves sliding over the channels are regulated by their stops *b* striking the stops *c* on the expansion plates in their inward motion, and the stops *d* on the ends of the grooved guide *f*. As these stops *d* are stationary, the cut-off valves move outward the same distance in every direction. *e e* are the grooves in the guide *f* for guiding the expansion-plates in their inward and outward motions in presenting their stops *c c* to determine the amount of cutting off the steam. The axle *h* is worked from the governor. The channels *a a* should be no larger

than will secure the cut-off valves from slipping, as too large channels would cause too much pressure on the said valves.

*Claim.*—The combination of the channels *a a* and holes *p p*, with the cut-off valves *D D* and exhaust recess *O*, as described, or their equivalents, for the purposes herein set forth, or any other purpose for which they are suitable, merely modifying the parts to suit circumstances, while the principles involved are the same.

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No. 13,369.—NORMAN W. WHEELER.—*Method of Operating Steam-Valves.*—Patented July 31, 1855; antedated March 1, 1855. (Plates, p. 130.)

The parts being in the position represented in the drawing, steam is admitted into the cylinder to the left of piston *B* in  $g^1$  and between the pistons *K K*. When *B* passes over and beyond port  $g^2$ , the steam passes through  $g^2$  into *C D* between the two pistons of unequal areas *K H*, which will move all the pistons towards the left by virtue of the greater area of *H* than that of *K*. This movement will continue after *K* shall have passed over and closed  $g^2$ , and cut off the flow from cylinder *a* by virtue of the expansion of the steam already contained between *H* and *K*, until *H* (to the left of *K*) shall have passed the exhaust-passage *r*, and the steam is released through *r* into *f*. This movement will have changed the positions of the pistons *H H* at the ends of valve-rod *t*, so that the induction and exhaustion into and out of the cylinder *a* is reversed, and  $g^2$  is brought between pistons at equal areas, so that the valves remain at rest until *B* has completed its return-stroke and brought  $g^1$  from the exhaust to the steam-side of the piston *B*. These movements being repeated, secure a reciprocating motion of *B*.

The inventor says: I am aware that valves of steam-engines have been actuated by steam-pressure, applied to pistons other than the main working pistons in the "starting gear" of the early German and English river and marine engines, and that the separate and individual parts of the engine are old and well known, and do not claim them; neither do I claim closing cut-off valves by steam-pressure released from the working cylinder through a passage opening into said cylinder near the desired point of cutting off.

I claim, first, actuating the induction and eduction valves of any double-acting reciprocating steam-engine by means of steam-pressure derived from the working cylinder, and released therefrom by the passage of the working piston over and beyond appropriate ports, when the pistons, or their equivalents, upon which such pressure acts, are so arranged that no movement of the valves shall result from the passage of the working piston over the first of two or more such ports in any full stroke.

I claim releasing the steam contained between pistons of unequal areas by the passage of the larger one over its exhaust-port, and stopping the supply between the same pistons by the passage of the smaller one over its induction-port, substantially as described.

No. 13,498.—E. G. RUSSELL.—*Improved Regulating-Valve for Steam-Engines*.—Patented August 28, 1855.

The shoulder *j* forms a stop when it comes in contact with the valve-seat *a*, and it is bevelled at *e* where the slot *d* terminates, so as to leave a small portion of the slot uncovered when the shoulder is up to the seat, for the purpose of preventing the steam from being shut off entirely.

The inventor says: When steam is first admitted at *b*, as it rushes upon the valve it drives the valve along until the shoulder *j* is up to the seat, and then holds it, until, by the passage of steam through the small opening at *e*, the chamber *C* is filled with steam, and, on equilibrium being restored, the valve is forced open by spring *g*. In consequence of the free egress of steam from the chamber *C*, (when the engine is in operation,) the pressure of the steam in that chamber will always be less than it is in the inlet-chamber, and there will be a tendency to close the valve, but that is prevented by spring *g*, which balances the excess of pressure. As the velocity of the engine increases, the quantity exhausted from the outlet-chamber increases, and the relative pressure on the outlet side of the valve is diminished; consequently the valve is acted upon by the steam-pressure in the inlet-chamber, and the opening of the slot is contracted.

The inventor says: I do not claim to be the first inventor of a regulating-valve, the area of whose opening is increased or diminished by any tendency to increased or diminished velocity.

But I *claim* the hollow cylindrical valve *D*, open at one end and closed at the other, fitted in a cylindrical seat, with its closed end on the inlet side of the said seat, and provided with a slot at one side near the closed end, to allow the steam to pass through its interior, and having a spring applied, to balance the excess of pressure on the inlet side, and to give a tendency to open the valve, the whole operating as described.

No. 13,527.—PHILIP W. MCKENZIE.—*Improvement in Valves for Regulating Steam-Engines*.—Patented September 4, 1855. (Plates, p. 130.)

*A* is the steam-pipe, down which the steam passes from the boiler to the cylinder. When the stroke of the engine-piston first commences, the current of steam through pipe *A*, taking the direction of the arrows, is slow, and insufficient to overcome spring *P* and move the cut-off valve. By the time the piston has attained the desired speed, its force is sufficient to drive the valve down to the bottom of channel *H*, and shut off the steam. When the valve has reached this position, the pressure of the steam, acting on a surface equal to the area of its bottom face, will keep it closed until the induction-valve covers the port of the engine. The adjustable stop *p*<sup>1</sup>, below the lifting-plate *K*, prevents the cut-off valve from coming close down on its seat *H*. When the induction-valve covers the port of the engine, sufficient steam is allowed to pass through the slight opening between the cut-off valve

and its seat, to start the cut-off valve, and the valve will immediately be opened full by the spring P, to admit steam for the next stroke of the piston. The governor may be so connected with rod S as to lower it as the speed increases, together with the spring-bearing *v* attached to the end of rod S, whereby the spring will be weakened, and *vice versa*. The too rapid opening of the cut-off valve is prevented by the cushioning of the steam in cylinder E, which cushioning is produced by valve *d* closing opening *e*, and causing the steam to escape only at *j* by the adjustable valve *k*.

*I claim* : 1st. The construction and arrangement of the cut-off valve I, and its seat H *m* I, and the disk *k*, and the application to the said valve of a variable spring P, or their equivalents, whereby the valve is made to cut off the supply of steam by the action of the current of steam in the passage from the boiler to the engine, when it has attained the desired speed.

2d. The employment, in connection with the cut-off valve, of the piston I working in the cylinder E, which is provided with a valve *d* and adjustable valve *k*, to prevent the too sudden opening of the said valve, the said piston, cylinders, and valves operating as set forth.

3d. Providing for the opening of the cut-off valve by means of the spring P, as soon as the slide or other induction-valve covers the port of the cylinder, by the employment of a stop *p*<sup>2</sup>, to prevent the entire closing of the said valves.

No. 13,637.—HENRY E. CANFIELD.—*Improvement in Cut-off Valves for Oscillating Engines*.—Patented October 9, 1855. (Plates, p. 130.)

B is the valve box; G, pipe leading to the boiler; F, exhaust pipe communicating with the space enclosed by partition D. When the piston is at the end of its stroke, (see fig. 1,) the partition D will cover both of the steam ports E E. In fig. 2 the piston is represented at half stroke. The loose valves C<sup>1</sup> C<sup>2</sup> alternately cover the steam ports; and by adjusting the set screws H<sup>1</sup> H<sup>2</sup> so as to increase or diminish the distance travelled by the loose valves, the steam can be cut off at any part of the stroke.

*Claim*.—The arrangement in oscillating engines of separate loose valves, moving independent of each other, when the motion is given them by the oscillation of the cylinder, for the purpose of cutting off the steam at such part of the stroke as may be desired, substantially as shown and described.

No. 13,889.—JOHN TREMPER.—*Improved Means of Connexion between Regulator-Valve and Governor's Stem*.—Patented December 4, 1855. (Plates, p. 130.)

A, throttle-valve stem; C, governor-valve stem. The position where the governor and valve are disconnected is represented by dotted lines.

*Claim*.—Effecting the connexion between the throttle-valve cut-off, or other regulator-valve, and the governor-stem, by means of a pin *d*,

working within a slot *a* or against a bearing face, the said slot or bearing face having an escape opening *b*, opposite to which the pin *d* is brought by the cessation of the operation of the governor, whereby the pin is allowed to escape from the said slot or bearing face, and thereby effect the disconnexion of the governor from the valve or cut-off instantaneously, to allow the valve to be closed by a spring or weight provided for the purpose, to stop the engine immediately after the governor ceases to operate the said pin *d*, being attached to the governor rod, and the said slot or bearing face *a* and escape opening *b* being in or upon the lever of the throttle valve or cut-off, or, what is equivalent, the pin being attached to the said lever, and the slot or bearing face and escape openings being in the connecting-rod of the governor, or in a plate connected therewith, or, what is equivalent, by a toothed rack and segment, substantially as described.

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No. 13,923.—E. D. LEAVITT, Jr.—*Improvement in Slide-Valves for Steam-Engines*.—Patented December 11, 1855. (Plates, p. 130.)

Valve A is made tapering in a transverse direction, (from *c* to *d*,) as seen in fig. 3, but has its two faces parallel in a longitudinal direction, as shown in fig. 1. The valve-seat *a* and the interior face of cover D of the steam-chest S are tapered laterally to correspond with the tapered faces of the valve. By thus tapering the valve, one side *c* is made to have a greater area than the other side *d*; and consequently the steam tends to force the valve in the direction of the arrow, and thus keeps the valve tight between the faces *a b*, notwithstanding any wear. In order to admit of the necessary lateral movement of the valve to compensate for the wear, the valve-rod B is fitted to a slot *e*, which is made through the valve and plates C C, which are fitted snugly to the rod, and serve as guides to this lateral movement.

*Claim*.—Making the valve and the corresponding parts of the steam-chest, between which it works, of tapering form laterally, and fitting the valve to its rod in such manner as to be capable of lateral movement, substantially as described, whereby the valve is always kept tight between the seat and the back of the steam-chest by the pressure of the steam, and the wearing of the rubbing-surfaces is always compensated for.

## VII.—NAVIGATION.

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No. 12,435.—SAMUEL R. BRYANT.—*Improved Anchor-Tripper*.—Patented February 27, 1855. (Plates, p. 131.)

Having dropped the small end of supporter B into step *c* and within openings *e e*, and having secured the pawl C and hold-fast D to the bed-frame A, it may be bolted to the cat-head, or wherever required; B is then moved back until its curved corner comes flush with the front of frame A, and the chain-link is shoved up within the space between the guard *a* and frame B, until it is sufficiently high to allow the curved end *g* of supporter B to be again moved to the front, and within the link; the pawl C is then moved around pin *f* until it arrives directly in the rear of the upper end of supporter B, and the hold-fast D is dropped, when it will be locked. When it is required to drop the anchor, the hold-fast D is lifted and the pawl C shoved to one side.

*Claim*.—The supporter B, the pawl C, and the hold-fast D, as arranged in relation to the guard *a*, for the purpose set forth.

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No. 12,622.—RICHARD V. DE GUINON.—*Improvement in Anchors*.—Patented April 3, 1855. (Plates, p. 131.)

The flukes, forming a concave basin of large area, (suitable for sandy or muddy bottom,) are so constructed that they can be attached to the ordinary anchor.

The inventor says: I do not claim fitting an anchor so as to hold in mud or sand, by providing either large, fixed, or movable flukes in themselves; but I *claim* the method described of fitting a pair of movable flukes *g* to a suitable anchor, so as to fit it to hold in soft or sandy soil, by means of the tie-rods *h*, thimble 2, and collar 1, for the purposes as specified.

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No. 13,847.—PETER H. JACKSON.—*Improvement in Cat-Head Anchor-Stoppers*.—Patented November 27, 1855. (Plates, p. 131.)

On reference to figure 2 it will be seen that the ring *h* of the chain sets into a fork *f* of the hasp *e*, within the vertical line from the centre of fulcrum-pin *d*, and therefore the weight of the chain tends to keep the end of the hasp *e* in notch *i*, without any strain on locking-piece 6; but, when the same is drawn aside to clear the lock 6 from the end of hasp *e*, the cam-piece 7 pushes the end of the hasp *e* sufficiently out of notch 1 to throw the weight of the chain to the other side of the fulcrum-pin *d*, when the hasp will turn down and the chain-link *h* slide off.

The inventor says: I do not claim the hasp *e* in itself, neither do I claim retaining the upper end thereof by means of a hook or locking-piece; but I *claim* the combination of the locking-piece *g* with its cam

7 combined with the hasp *e*, so that said 'cam-piece 7 forces the hasp *e* out of the notch 1, as said locking-piece *g* is turned to one side, and causes the ring or loop over the hasp *e* to be thrown off or disconnected, as specified.

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No. 13,991.—WILLIAM H. MERRILL.—*Improvement in Hoisting-Blocks*.—Patented December 25, 1855. (Plates, p. 131.)

By the cap protecting the upper journal or pintle, and the roll the lower pintle, dirt or any other obstruction is prevented from getting into the bearings and clogging the roll.

The inventor says: I do not claim the use of friction-rolls upon the cheeks of blocks, for these have long been in use; but I *claim* the roll, figure 2, the upper rockets or cap, figure 4, and the lower pintle or step, figure 3, used together, for the purposes and in the manner substantially as set forth.

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No. 12,380.—HENRY T. DEXTER.—*Improvement in Wharf-Boats*.—Patented February 13, 1855. (Plates, p. 131.)

In the engraving A represents the turn-table, (below decks,) and B the inclined gangway leading down to it, wide enough for a dray to pass.

*Claim*.—So constructing a wharf-boat that a turn-table may be conveniently located therein, upon which a dray may be drawn and turned around, and so that freight may be delivered or received from any part of the boat without much handling, substantially as described.

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No. 13,315.—EDWIN B. LARCHAR.—*Improvement in making Gutta-Percha Boats*.—Patented July 24, 1855. (Plates, p. 131.)

Figure 1 represents a bottom view of the male mould; figure 2 the female mould, secured together by clamp-screws *a*; figure 3, sectional view of female mould; figure 4, side view of male mould; figure 5, air-chamber, with the under part of slip-off; figure 6, said under part of the air-chamber, to be attached to the other portion of the chamber (fig. 5) by searing the edges of the latter with a hot iron before the whole is pressed in its place on the boat.

The inventor says: I disclaim any particular form of boat, air-chamber, or bulkhead, or any cylindrical or other supporters, or gunwales, or to the mere making of gutta-percha vessels.

I *claim* the method of making a safety boat or other vessel of gutta-percha mixed with glue, so that the air-chambers or other parts, if separately formed, may, together with the boat-body, be so united and completed at one pressure, that if the braces, knees, thwarts, supporters, or other accessories to the boat proper are solid, the whole, with the inner and outer forms, may be made or completed together at one time and at one pressure, substantially in the manner described.



No. 13,510.—NATHAN THOMPSON, Jr.—*Improved Collapsible Boat*.—Patented August 28, 1855. (Plates, p. 131.)

*a* is the keelson, to which, by means of hinges *a*<sup>1</sup>, are secured the triangular flaps or bottom pieces *b b*; at each end of the keelson are hinged the ends, bow, and stern of the sides *c c*, which may be constructed of one piece of flexible or elastic material, such as wood. When the flaps are turned up, the sides can be collapsed and all the component parts of the boat—sides, flaps, and keelson—will lie parallel and in contact with each other. The hinges at the sides of the boat have a piece of flexible water-proof material secured to them as shown at *f*<sup>1</sup>, in order to make the joints water-proof. Figure 1 represents the boat when open; figure 2 when collapsed. To strengthen the boat, swinging pieces *l* may be added, which, when folded up, also lie parallel with the keelson. To these braces pieces *m* are hinged, which serve as thwarts. (See figures 4, 5, 6.) The sides are connected to the ends of the keelson by a bolt *f* (attached to the sides) and an elongated ring *e* (fast to the keelson,) to accommodate the motion of the jointed ends of the sides in opening or collapsing the boat.

I claim: 1st. The combination of hinged flaps or bottom pieces with elastic or flexible sides, in the manner and for the purpose specified.

2d. The combination of hinged flaps with a centre keelson and flexible or elastic sides, as set forth.

3d. I claim either of these combinations in connection with water-proof fabric for closing and securing the joints between the several parts, applied substantially as specified.

4th. I claim a hinged swinging brace, in combination with a hinged thwart thereto attached.

Lastly, I claim the sliding-joint in combination with the bow and stern hinges, whereby the effective length of a keelson or flaps may be altered so as to suit the exhausted and collapsed states of the boat.

No. 12,703.—WILLIAM THOMAS.—*Improvement in Cabin Chairs*.—Patented April 10, 1855. (Plates, p. 131.)

No description required.

*Claim*.—Placing the seat *F* between a frame *E*, which is attached by pivots *e e* to the body of the chair; the seat having friction-rollers or wheels *f f* attached to its under side, which work upon the lower curved portion of the frame *E*, as herein shown; whereby the frame and body of the chair are allowed to turn or be inclined in accordance with the motions of the vessel and the seat at the same time, always remaining in a horizontal position, as herein described.

No. 12,325.—JESSE REED.—*Improvement in Cable-Stoppers*.—Patented January 30, 1855. (Plates, p. 132.)

By more or less depressing the lever *H*, the jaw *D* can be made to press more or less heavily upon the chain, and thus retard or stop its motion.

The inventor says: I do not claim stopping the motion of a chain-cable by subjecting it to pressure between two plane surfaces.

But I *claim* the described arrangement of the lever H, the crank G, and the upper jaw D, whereby the latter is allowed to accommodate itself to the varying size of the links, and the operation of stopping the chain is assisted by the friction of the chain itself upon the upper jaw.

No. 13,593.—JAMES EMERSON.—*Improvement in Pressure-Stoppers for Chain Cables*.—Patented September 25, 1855. (Plates, p. 132.)

While the chain is wound up, the jaw B may be raised; but while the chain is being let out, the jaw is thrown over upon the bed-plate, as shown in the engravings. If it is desired to retard the motion of the chain, the upper end of lever E is turned around, by hand, in the direction indicated by the arrow, and the jaw will be pressed down upon the chain, both the vertical and horizontal links being subjected to pressure; and if it is desired to stop the chain entirely, the lever E is still further depressed, and the pawl D will catch against the upper sides of the vertical links.

*Claim*.—The arrangement of the jaw hinged at its one end, and having a pawl at or near the other, with the bed-plate for operation together, the whole being constructed substantially as specified.

No. 13,760.—CHARLES PERLEY.—*Improvement in Chain-Locker Pipes*.—Patented November 6, 1855. (Plates, p. 132.)

*c* is a circular flanch formed around opening *b*; *d* is a flanch extending out on one side of opening *b*, and formed with a groove 2, for allowing the chain to run into or out of the chain-locker. *g* is a cover to exclude rats, and to prevent the entrance of water.

The inventor says: I *claim* the locking piece *f*, constructed substantially as specified, and applied to the chain-locker pipe, in the manner end for the purposes set forth; and in combination with said locking piece *f* and flanches *c* and *d*, I claim the cover *g* for the purposes and as specified.

No. 12,143.—FARNHAM Z. TUCKER.—*Improvement in Life-Preserving Rafts*.—Patented January 2, 1855. (Plates, p. 132.)

A series of hollow metal cylinders A are connected together by transverse bolts *a*; at each end of the cylinders there are two transverse bars *d*, one on the upper and one on the lower surfaces of the cylinders, and *e* are bolts which pass vertically through the cylinders and bars *d*. Bolts *a* and *e* pass through tubes *f* in the cylinders, to prevent leakage. Ropes *h* serve as hold-fasts for passengers. These cylinders can be stowed away in a detached form, and be secured together in a very short time when required.

The inventor says: I am aware that buoyant cylinders of metal or India-rubber, either made in sections or of one chamber throughout,

have been used as life-preservers, boats, and rafts, and I therefore do not claim constructing a raft of such tubes.

But what I do *claim*, as of my invention, and desire to have secured to me by letters patent, is the manner I have set forth of connecting such buoyant cylinders, by passing rods through tubes at right angles, as shown in the drawing by letters *ff a* and *e*, and secured by nuts, in connexion with the straps or bands *d*, whereby I make a strong, convenient, and ever-ready life-preserving raft.

No. 12,220.—NATHAN THOMPSON, Jr.—*Improvement in Life-Preserving Seats*.—Patented January 9, 1855. (Plates, p. 132.)

The legs *a* of these seats when serving as seats are retained in position by a spring *g*; when to be used as life-preservers they are opened, (they being hinged in *f*;) and while held in both hands passed round the body, when the spring will hold them in that position. These life-preservers, as will be seen, adapt themselves to various sized persons.

The inventor says: I do not claim herein hinged or adjustable buoyants attached to the legs of a seat, as the buoyants herein described are firmly secured to the legs of the stool; neither do I claim a divided top life-preserver in combination with legs arranged in such manner that one half of said top may be in front and the other half in the rear of the person using it as a life-preserver, because in this life-preserver the whole of the top buoyant is on the same side, or is wholly in front or in the rear of the user. Neither do I claim a buoyant seat generally, nor any special kind of buoyants, nor any precise method of construction, nor any specific materials, so long as the two parts of a seat provided with top and bottom buoyants are separated, and then connected by means of a hinge and a spring, as herein set forth, or substantially so. Neither do I claim a special kind of hinge or spring, nor do I limit myself to the use of one of each in each life-preserver, as two, three, or more hinges all in a line, or numerous springs all effecting the same purpose, might be employed. Neither do I limit myself to any precise location of the point of separation, so long as that point is so placed that it will serve the herein described purposes.

But I do *claim* the adapting or accommodating life-preserving seat, whose components are a separated buoyant seat, a hinge, and a spring, combined with each other in the manner and for the purposes substantially as are herein specified.

No. 12,375.—HIRAM BERDAN.—*Improvement in Life-Boats*.—Patented February 13, 1855. (Plates, p. 132.)

The ribs *F* turn on vertical pivots *b c*, so that they can be folded against the central frame *A B D*, as seen in fig. 3. The gunwale-bars *E* are hinged at *a* to the ends of the central frame, and can be turned down and folded against said frame. When to be ready for use, the ribs *F* are swung outwards, and the gunwale-bars are fitted into notches *e* at the outer ends of the ribs, and an India-rubber cover *G* is drawn over the whole of it.

The inventor says: I do not claim of themselves either the hinged or pivoted ribs or the hinged gunwale-bars.

But I *claim* the method described of keeping the gunwale-bars E E in place when the boat is extended for service by means of the notches e e, which are made in the ribs F F to receive the said gunwale-bars.

No. 12,405.—GEO. BLANCHARD.—*Improvement in Life-Saving Rafts*.—Patented February 20, 1855. (Plates, p. 132.)

F<sup>1</sup> are the floats, and F<sup>2</sup> the spaces for storing provisions, &c. The levers B are connected to the bars C, and these bars C have spring-catches E bolted on their ends; the bars and springs slide in cases D. The springs escape and take effect on the edges of the cases D, to secure the raft when opened at the desired distance. The ends of the chains F are connected to bolts A, and to the chains are connected perpendicular bolts G, and the upper ends of the bolts G are bolted to the central joints of the levers B; the chains F and bolts G serving to form additional lifting braces or supporters to the connecting levers B when the passengers are on the raft. There are also additional connecting chains K, which are made fast to the metallic bolts A, and are brought to bear on the outside of the floats to prevent them from spreading.

*Claim*.—1st. The arrangement of the toggle or jointed levers B in relation to the buoyant cylinders or floats, and the catches or locks C D E, by which, when let fall, the raft, by its own weight, is extended and locked, and made entirely ready for immediate use, as set forth.

2d. The arrangement of the braces G with the chains F and K, in connexion with the floats or buoyant cylinders and jointed levers, for the better sustaining of the bed formed by the extended levers, and for the holding of the parts of the raft together in a sufficiently firm and yet yielding condition, to enable the raft to be a safe and well-sustained life-preserving structure, as described.

No. 12,450.—JOS. STEVENSON.—*Bed-Boat or Life-Preserver*.—Patented February 27, 1855. (Plates, p. 132.)

a is the mattress; b the frame-work which forms the sides of the boat; c the part which forms the bulkhead or ends of the boat when in use on ship-board; these parts fold underneath, as shown in fig. 1, the bottom of the berth being cut out to admit their passing through; d air-tube, and e stop-cock; f India-rubber cloth apron, intended, when the bed is converted into a boat, to keep out the water, it being drawn up and fastened to the knobs g. When in use as a bed, the aprons may be spread out flat, as shown in fig. 2. i is a hollow belt of India-rubber cloth covering the joint formed by the junction of the two sides.

The inventor says: I do not claim the material of which the boat is constructed, nor do I claim a flexible or folding boat, as these are not new.

But I *claim* so hinging the bulkheads or bows to a flexible boat as

that they may be turned down out of the way for stowage in the bunks or berths of a vessel, and may be as readily drawn up and laced, so as to form a bow substantially as described.

I also claim, in combination with the hinged bulkheads or bows, the apron which is drawn up over the joint of the two bulkheads, for the purpose of preventing any water from entering the boat through said joints, in the manner described.

No. 12,473.—JOHN ALLEN.—*Improvements in Life-Boats.*—Patented March 6, 1855. (Plates, p. 133.)

By turning the right and left handed screw B the frame can readily be extended or contracted (see figures 1 and 2). The water acting upon the flexible cover of the frame (reducing and enlarging its inner capacity) makes it operate like a bellows-pump, so as to draw in fresh air and discharge air from within. The inside of this boat can be reached through a man-hole. Weights secured to the bottom rib will keep the boat right side up. The pipes are properly provided with valves.

*Claim.*—1st. A life-boat, composed, substantially as described, of a frame and a flexible covering, and provided with inlet and outlet pipes and valves, so that, when the flexible covering is closed up perfectly water-tight, the action of the waves on the said flexible covering, and the tossing about of the boat on the water, will keep up a constant pumping action, and thereby supply fresh air to and discharge vitiated air from the interior.

2d. The construction of the frame, substantially as set forth, of the two tubes A A, and right and left handed screw B, and the longitudinal ribs *b b*, all combined and operating as described.

No. 12,537.—EDWARD LYON BERTHOE.—*Improvement in Folding Life-Boats.*—Patented March 20, 1855; patented in England, June 12, 1851. (Plates, p. 133.)

*l* and *f* are water-proof canvass covers; *m m* are the bottom boards, hinged in the middle. The nature of the invention, and its operation, will be understood from the engravings, without further description.

In figure 1, part of the covers, wales, and bottom boards are represented as being removed, so as to exhibit other parts.

*Claim.*—Hinging longitudinal ribs of the two sides to the stern and the stern-post, in such manner that those ribs shall be capable of being folded down, and shall lie parallel with the keel when the boat is collapsed, as described.

No. 12,743.—J. T. PHEATT.—*Improvement in Life-Preserving Doors.*—Patented April 17, 1855. (Plates, p. 133.)

The inflatable bags C are placed on the panels so as not to project beyond the faces of the frame-work, in order to protect them better

against accidental injury. Even if one of the bags should be rent, the buoyancy of the door will be but little reduced, and a horizontal floating level of the door may be maintained by omitting to inflate the panel and compartment diagonally opposite to the injured compartment.

*Claim.*—The arrangement herein shown and described of the inflatable water-proof coverings or bags on or over the panels, and within or below the face-level of the surrounding and intermediate frame-work of the panelled door or partition, as and for the purposes set forth.

No. 12,184.—C. LOCHER.—*Improvement in Folding Life-Boats.*—Patented January 2. 1855. (Plates, p. 133.)

The central frame *a b d f e c* is provided with supports for the reception of the pivots *s t* of the ribs *g*. These ribs, thus pivoted to the central frame, are connected by a chain *i*, one at each side of the central frame. When the ends *j* of the chains are connected, the ribs stand at right-angles to the frame, as shown in the lower part of figure 2, which represents a top view of the apparatus. When the ends of the chains are disconnected, the ribs can be folded over one another, as represented in the upper half of figure 2. The ribs, when extended, serve to support a covering of water-proof material, so as to form a boat. Figure 3 is a cross section, figure 4 a side view of one of the ribs, and figure 1 a side view of the boat.

The inventor says: I do not claim hinging or pivoting the ribs to the keel, or to a central frame, so as to be folded or extended at pleasure; but I do *claim* connecting the folding-ribs by means of a chain, or chains, being applied, substantially as described, to spread all the ribs at once, and when spread, to serve the purpose of keeping all in place.

No. 13,546.—GEORGE K. HOOPER.—*Life-Preserving Bed for Ships.*—Patented September 11, 1855. (Plates, p. 133.)

B B, C C, are metallic air-tight pontoons; the pontoons B B are hinged at *a* and supported at their inner ends by springs D, so as to give increased elasticity immediately underneath the shoulder-blades of a person reposing upon the mattress E. A is a wooden frame.

I *claim* my improved manufacture, or life-preserving spring pontoon bed, as made of a wooden frame or mattress, a series of pontoons, and a series of springs, arranged and connected together substantially as specified.

And I also claim the improvement of making each of the pontoons B B of less depth at its inner edge than it is at its outer one, or that which is hinged to the frame, when the said pontoon is of such size as to project beneath the shoulder-blades of a person when reposing upon the mattress E, the object of so constructing said portion having been heretofore specified.

No. 13,771.—PETER VAN ZILE, SEARLES M. GRIFFIN, and J. WARREN S. DEY.—*Sofa Life-Boat*.—Patented November 6, 1855. (Plates, p. 133.)

D D are the air-chambers, and C C the tops of the air-chambers, forming seats. The engravings represent the life-boat as open (E being the hinge) and forming two sofas.

The inventors say: We do not claim, broadly, making a life-preserver in such a manner that it may, when out of use for this special purpose, be applied to other useful purposes, either with or without change or modification; but we *claim* the structure set forth, the same consisting of two buoyant parts, so constructed that, when separate, they shall each form a settee or sofa, and when united, a life-boat, as set forth.

No. 13,994.—ADOLPHE PECOULE.—*Combined Log and Sounding-Line*.—Patented December 25, 1855. (Plates, p. 134.)

The pulley *i* is fixed at the vertex of the buoy; the line *ll* passes between said pulley and spring *m*; the length of line between the buoy and the weight is to be increased or diminished according to the depth of water which it is desired to sound. While the buoy remains upright, as it will be caused to do by the friction of the line against spring *m*, so long as the weight hangs on the line, the spring allows the line to slip between itself and the pulley, but as soon as the weight touches the bottom, it no longer keeps the buoy upright. (See dotted lines in fig. 1.)

The depth of water which it is desired to sound having been determined, a pin is inserted between the strands of the line, thus stopping the weight from sinking further. From this pin backwards is fastened to the line a floater *h*, which receives the point *g* of two lines connecting to the corners *a c* of the buoy. When, after the operation of measuring or sounding, the log is hauled on board, the point *g* leaves the floater, the weight *e* rises up towards the buoy, and this latter assumes a horizontal position (see fig. 2) so as to offer the least resistance to the water.

The inventor says: I *claim* the sounding-log, constructed substantially as described; that is to say, being composed of a buoy *a b c d*, having applied to it a weight *e*, attached to a line passing between a pulley *i* and a spring *m*, or its equivalent, at the bottom.

And this I claim, whether used with or without a connection *g h*, to connect the line with the top part of it; the whole constituting an instrument by which the speed of a vessel may be measured, or by which soundings may be taken, without stopping or heaving-to, as fully set forth.

No. 12,298.—JOHN U. WALLIS.—*Improvement in Paddle-Wheels*.—Patented January 23, 1855. (Plates, p. 134.)

The inventor says: I do not claim the employment of oblique paddle-floats, nor arranging the oblique paddle-floats in pairs in the form of the letter V, otherwise than as described.

But I *claim*: 1st. The attachment of the oblique paddle-floats, each by one edge only, to opposite sides of a wheel A, or its equivalent, substantially as described.

2d. I claim attaching the paddle-floats to the wheel A, or its equivalent, by hinge joints, for the purpose of enabling them to be adjusted at various degrees of obliquity by screws *a a*, or their equivalents, and to adapt their position to the direction of the revolution of the wheel, as set forth. (See engraving.)

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No. 12,460.—PETER LEAR.—*Improved Method of Arranging and Operating Submerged Horizontal Paddle-Wheels*.—Patented February 27, 1855. (Plates, p. 134.)

In paddle-wheels of this description the water is thrown off centrifugally from the case in which the wheels revolve, and a partial vacuum is thus produced within the wheel-case, which is constantly supplied by water entering the case with the buckets. To relieve the wheel and to supply the centre of the wheel with air or water, in such manner that the buckets themselves may not be retarded by the effort to draw it in from the circumference, the inventor opens a passage into or near the centre of the wheel-case for the admission of either air or water, to supply the place of that which is thrown off centrifugally.

The inventor says: I do not claim pumping air into the wheel-house of a horizontal or other paddle-wheel; but I *claim* the pipe P, arranged in connexion with the wheel-chamber, in the manner described and for the purpose set forth.

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No. 12,621.—LEVI M. DEHART.—*Adjustable Paddle-Wheel*.—Patented April 3, 1855. (Plates, p. 134.)

It will be understood from the engraving how the diameter of this paddle-wheel can be increased or diminished, by means of the pinions D and toothed arms E, carrying the paddles H.

The engraving exhibits only two arms of this wheel, the opposite two arms being exactly alike; O is the centre of the wheel.

The inventor says: I am aware that reefing-buckets on paddle-wheels have been used, and that an expanding propeller has also been essayed, in which the wings have been drawn towards the centre, or run out by means of racks and pinions. These I do not claim; but I *claim*, in combination with the hollow arms permanently fixed to the hub, the arms carrying the sections of the buckets, when said arms are so arranged as to be slid within the hollow arms by a rack and pinion, or its equivalent, substantially in the manner and for the purpose set forth.

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No. 13,058.—AUGUSTUS M. GLOVER.—*Improvements in the Buckets of Paddle-Wheels*.—Patented June 12, 1855. (Plates, p. 134.)

Each of the paddles is made concave in front, while the back is a plain surface. The advantages of the concave face of concentrating to



a focus the force upon the water, when the wheel is used for propelling forward, is combined with the preservation of the plane upon the back of the paddle necessary to prevent the slip arising from paddles formed with a concave face and a convex back.

C are two of the opposite arms of a paddle-wheel; D the paddle.

*Claim.*—The giving such form, viz: a plain concave, to the paddle, that all the advantage of the concave is secured without loss of hold upon the water, and slip in backing vessels propelled by wheels, substantially in the manner set forth.

No. 13,190.—JOHN UPHAM WALLIS.—*Improvement in Paddle-Wheels.*—Patented July 3, 1855. (Plates, p. 134.)

The nature of this improvement will be understood from the claim and engravings.

*Claim.*—Attaching the innermost or central portion of the buckets rigidly to a single wheel or central rim *a*, and staying the outer portions thereof to the said rim by stays *b b*, substantially as described, whereby the construction of the wheel is simplified, and great strength is obtained.

No. 13,940.—FREDERICK W. CAPEN.—*Improvement in Paddle-Wheels.*—Patented December 18, 1855. (Plates, p. 134.)

The nature of this invention consists in a skeleton paddle or alleviator E, placed in front of and combined with each or any paddle D of the wheel A B, on the shaft C, the object of this alleviator being to relieve the said paddle from a sudden blow or concussion on its entering the water. This alleviator E, constructed of a rectangular frame *a*, and one or more series of bars *b b b*, *c c c*, interwoven with one another, or interlaced so as to have meshes, orifices, or spaces between them, will break up or divide into numerous streams the mass of water against which it may impinge, and immediately before the same may be struck by the paddle to which such alleviator may be applied.

I *claim* the combination of one or more alleviators or skeleton paddles, constructed essentially as described, with each or any main paddle or float of a paddle-wheel, or propeller, the same being for the purposes as specified.

No. 13,988.—BENJAMIN HILL.—*Improvement in Paddle-Wheels.*—Patented December 25, 1855. (Plates, p. 134.)

Two or more discs or rings D D<sup>1</sup> are keyed on to the paddle-shaft S. These rings have as many radial arms A as it is intended to have paddles or valves, which valves V are hinged to said arms at *h h*. The valves open so that when perpendicular to the plane of the disc to which they are attached their outer edges will rest against the bars P attached to the arms of the other disc. In this position the valves will present their surfaces to the water. When the shaft revolves, the edge

of one valve after the other will catch the water, and consequently will be opened until it strikes and rests against the opposite bar P, as above described.

There are to be two sets of valves, hinged so as to open in opposite directions for forward or backward motion of the vessel.

*Claim.*—The radially hinged valves, used as substitutes for paddles, said valves being attached to discs or rings, and supported thereby substantially as described.

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No. 12,190.—CHARLES DE BERGUE.—*Improved Propeller.*—Patented January 9, 1855. (Plates, p. 134.)

No description required.

*Claim.*—An apparatus or blade so oscillating or rocking in water or other fluid, on a centre or axis worked to and fro, that each of its opposite sides shall alternately present a moving inclined face or surface to the fluid on which it acts, so as to force, displace, or propel the same, or a body floating thereon, such apparatus or blade working or rocking within a case or chamber, through which the fluid acted upon is thereby caused to pass, or conversely, in which the fluid in passing may act on the blade as described.

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No. 12,446.—FRANKLIN PEALE.—*Improvement in Propellers.*—Patented February 27, 1855. (Plates, p. 135.)

The shaft B, which is terminated by arms K, works through the hollow shaft C; the shaft B is revolved by a crank E, and C by a crank H. The paddles A are connected to the shaft C by means of a universal joint D. By adjusting the cranks H and E, the paddles may be caused to vibrate through any number of degrees of a revolution or at any angle of inclination. Also, by setting the cranks J and G in any position in relation to each other, the angle of inclination of the paddles to the line of progression can be changed. (See dotted lines in fig. 3.)

*Claim.*—The arrangement of the paddles A, the arms K, and shafts B and C, arranged and operating in the manner and for the purpose substantially as described.

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No. 12,752.—WILLIAM D. JONES, assignor to HENRY WHINFIELD.—*Improvement in Propellers.*—Patented April 17, 1855. (Plates, p. 135.)

A A are discs, B B their shafts, C C the paddles, D the connecting ball and socket joint, E cogs on discs A, F F driving pinions, G G hinges, H H connecting rings. I denotes the point where the discs are nearest together, there being no resistance from the paddles; K the position where the discs are farthest apart, there being the greatest power of propulsion. From position I, where the paddles are folded down flat on the face of the discs, and consequently pass through the water without offering resistance, they evolve gradually till reaching position K, of greatest resistance, where they stand unfolded at right-

angles to the faces of the discs; thereby being produced a continual and direct propulsion against the water at one point and no resistance at the other point.

*Claim.*—The arrangement and combination of the parts, forming a propeller, as fully set forth in the foregoing specification, for the purposes above mentioned.

No. 12,923.—HENRY LINK.—*Improved Propeller.*—Patented May 8, 1855. (Plates, p. 135.)

The semi-circular or semi-elliptical propeller E, vibrating on an eccentric vertical shaft F, is arranged underneath the bottom A of a vessel, B representing the keel, which is provided with a slot C for the propeller to work through. The propeller, whose straight front part is placed towards the fore part of the vessel, and the curved circumference towards the stern, is vibrated each way about one sixth of the whole circle. Paddles I I, hinged on rods G G<sup>1</sup> and arms H H<sup>1</sup>, may be so arranged, that when one (for instance I) is inactive, the other (I<sup>1</sup>) will abut against the bent down ends of the arms, and propel.

*Claim.*—A semi-circular propeller, constructed and operated substantially as described, for the purposes set forth, whether the same is used with or without hinged paddles.

No. 12,955.—WILLIAM LANSDELL.—*Improvement in Buoyant Propellers.*—Patented May 29, 1855. (Plates, p. 135.)

The nature of this improvement consists in the construction of two segmentary cylinders composed of hollow, water-tight threads, A B C D, arranged in the form of a screw, for the purposes of supporting a superstructure by their power of flotation, and of giving motion to the same by their revolutions in the water. These threads are separated by spiral water spaces through the whole lengths of the threads, and surround an open space in the centre, which is framed and connected with the bearings, as a hollow shaft, admitting the free passage of the water. *a* are the flanges referred to, in the claims, and the increased pitch is seen on the other edge at *b*.

The inventor says: I *claim* the combination of the hollow threads, in the form described, with the central and lateral water spaces, forming the threads of a screw, and securing both flotation and propulsion.

Also, the use of the flange, arranged on the regular edge of the segments, having the true pitch of the regular screw.

Also, the peculiar wedge-like form of the ends of the segments, having the effect to diminish the resistance of the immersed section of the head, while it increases the propelling force at the stern.

I do not confine myself to the exact proportions of the pitch, or form of the ends of the screw or its threads, as represented.

No. 13,041.—JOSEPH H. PENNY and THOMAS B. ROGERS.—*Improvement in Propellers*.—Patented June 12, 1855.—Patented in England, June 14, 1855. (Plates, p. 135.)

The nature of this improvement will be understood from the claim and engravings.

Fig. 1 is a plan; fig. 2, a side elevation.

The inventors say: We are aware that propellers, or paddle-wheels, have heretofore been made, having three throws or series of paddles, and also having the paddles enter and leave the water in a vertical position, and therefore we make no claim for such general device or arrangement.

But we *claim* the arrangement, as above described, of the connecting-rods *g* with the connecting-heads *b* and the paddles *a*, &c.; the connecting-rods passing through the connecting-heads, and the paddles being bolted to such rods, so that any one or more can be removed, if necessary, without interfering with the others, the whole being strong, and at the same time of light construction.

No. 13,078.—HENRY BOYNTON.—*Reciprocating Railway Propeller*.—Patented June 19, 1855. (Plates, p. 136.)

This invention consists in applying any rectilinear reciprocating motive power to the propelling of vessels, it being by levers in simple mechanical connection with the piston, which oscillates them longitudinally to the vessel, and which are, by lengthened arms, connected with oar-trucks, driven upon railways lengthwise of and upon the side of the vessel.

*i i* and *h* are the railways; at the end of the stroke, the wheels nearest the end of the railways pass the rails *j*<sup>1</sup>, and the other two wheels move upon the rails *j*, which are a little longer than *j*<sup>1</sup>, and vibrate *j*<sup>1</sup> outward for the said wheels; so that the truck *g* (which carries the oars) moves up parallel to the main rails on to the pivot-rails *k*, the guide-wheels passing under the catch-levers *o*, and thereby operate to detach the catch-levers *l*; the bearing-wheels, as they pass the pivot-centre, act upon the upper part of the rails *k*, pressing them at once into horizontal line with the upper rails *h*, and are there fastened by the catch-levers *l*, which are held by springs *m* to bars *n*. *E* and *D* are the walking-beams. A more detailed description would occupy too much space.

The inventor says: I disclaim, as any part of my invention, the working beam-stopping apparatus, as now used upon the Cornish engines, commonly called the bumper.

I *claim*: 1st. The double-wheeled oar-truck, provided with wheels rotating in opposite directions on the same axis, and running between upper and under simultaneously acting railways, constructed and applied substantially in the manner and for the purpose described, by which a longitudinal propeller for water-craft is held or confined to its designed railways.

2d. I claim, in combination with two sets of railways, one for the

forward and the other for the back-stroke, the ascending and descending railways, so arranged that the fore-wheels of the truck run upon one track and the after-wheels upon another track, whereby the truck is free to ascend and descend at either end of the main railways, in such a manner that a line drawn through its axles will be always parallel, or nearly so, to the main horizontal rails, substantially in the manner and for the purpose described.

3d. I claim the lower rising vibrating rails, and the upper pivot-moving rails, constructed and applied substantially as set forth.

4th. The combination of levers in their adaptation to railway propellers, by which the upper pivot rails at either end of the railways being moved by the truck wheels, those at the opposite end are similarly moved at the same time; and the addition of safety levers, by which, if the pivot rails upon either side end are moved, all the others are similarly moved at the same time.

5th. The combination of levers, by which the catch-bars, or fastenings to the upper pivot rails, are governed and disengaged by the truck wheels, and by which, if either one is disengaged, the others are also.

At the same time, I claim the combination of the curved toe rocking-shaft with the oscillating riding-bar, sustaining a weight or spring, with any reciprocating arm attached to the engine, for the purpose of gradually and rapidly retarding the piston, and bringing it and the car truck to a state of rest, as described.

No. 13,336.—AUGUSTIN DUBOCE.—*Improvement in Propellers*.—Patented July 24, 1855. (Plates, p. 136.)

The propelling motion of the paddles *b* will be understood from the claim and engravings.

*Claim*.—Giving the blades the motion specified, by connecting them with the sides of the vessel by means of a ball and socket joint *e*, or any equivalent therefor, in combination with an arm *h* projecting from the arbor of the blade, the end of which arm is connected by a sliding and ball and socket joint *i*, or any equivalent therefor, with a wheel or crank arm *j* on the crank or driving-shaft *k*, substantially as and for the purpose specified.

No. 13,394.—WM. J. MCINTIRE.—*Improvement in Propelling Vessels by the Direct Action of Steam on the Water*.—Patented August 7, 1855. (Plates, p. 136.)

The object of this invention is to let the steam act directly on the water below its surface, for the purpose of propelling the vessel. The steam issuing through square pipe *B* is to be protected from instantaneous condensation by surrounding with or encasing it within one pipe *C* (or two pipes *C D*, as represented in the engravings) of larger diameter than *B*, so as to leave a hollow space between the outer surface of *B* and the inner surface of *C*. Simultaneously with the steam, hot non-condensable gases (the inventor proposes to use the heated products of combustion taken from the flues of the boiler at the place of final

discharge) are to be forced out through said hollow space, so as to envelop and protect the jet of steam.

*Claim.*—Protecting the steam from condensation by discharging at the same time with it some non-condensable gas or gases, or fluids, or both in combination, in such manner as to form an envelope for the steam, for the purposes as described.

No. 12,119.—WILLIAM BALLARD.—*Improvement in Constructing Vessels.*—Patented January 2, 1855. (Plates, p. 136.)

The principal object of this invention is to combine the advantages of the so-called bluff and the clipper-bow. The inventor gives to the bow, as well as to the stern, what he calls an OG form, as shown in the drawings. By these means, he asserts, deck-room is given equal to a bluff bow, at the same time securing an easier entrance into the water than with a clipper-bow.

This construction of the stern, he states, enables him to remove the propeller and rudder a good distance from the run of the vessel.

*Claim.*—The construction of the bows and the sterns of vessels, substantially as described.

No. 12,359.—V P. CORBETT.—*Improvement in Constructing Ships and other Vessels.*—Patented February 6, 1855. (Plates, p. 137.)

*Claim.*—The arrangement shown and described of the India-rubber or elastic and water-proof pad *a*, covering, or lining, on the back of the inside lining and bracing planking, and between the said inside planking and the stiffer or more solid outer timbers or frame-work of the hull of the vessel; the same serving to form a stout elastic cushion or pad bearing for the inside planks to rest upon in their union to the outer frame-work of the ship, and constituting a planked elastic pad inside casing to the vessel, for operation in the manner, for the better accomplishment of the several purposes of protection, freedom from injury, and facility of repair, essentially as specified. (See engraving.)

No. 12,445.—ZADOC PANGBORN.—*Improvement in the Construction of Vessels.*—Patented February 27, 1855. (Plates, p. 137.)

The bifurcated ribs *a a* form a lozenge-shaped space *b*, which, when properly sheathed, will form a buoyant air-vessel.

*Claim.*—The arrangement of tanks constructed as set forth, the same consisting in the extension and bifurcation of the ribs of vessels' hulls, so as to form an arched series of tanks, or receptacles for tanks, in the manner and for the purposes set forth.

No. 13,278.—OTIS TUFTS.—*Improvement in Constructing Iron Ships.*—Patented July 17, 1855; patented in England, April 2, 1846. (Plates, p. 137.)

The nature of this improvement will be understood from the claim and engraving.

*Claim.*—Constructing the hull, decks, and bulkheads of ships with a double shell of iron, interfastened, for greatest strength, with binders, substantially as described.

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No. 13,231.—STEPHEN SAUNDERS.—*Vibrating Stop-Water for Ships and other Vessels.*—Patented July 10, 1855. (Plates, p. 137.)

The advantages of the vibrating stop-waters *a a* are as follows: When a vessel is running on a wind, all the water which the vessel makes above the stop-waters, which are on the lowest side of the vessel, will be arrested by said stop-waters; and when it becomes necessary to pump out the vessel, and she is brought up before the wind for that purpose, the said stop-waters on the side of the vessel that was depressed will swing inwards, and allow the water outside of them to readily flow inwards to the pump-well.

*Claim.*—The improvement produced by the combination of vibratory water-stops with the hulls of vessels, substantially as set forth.

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No. 12,968.—WEBSTER SHIBLES, assignor to HIMSELF and EDWARD O'BRIEN.—*Improvement in Reefing Topsails.*—Patented May 29, 1855. (Plates, p. 137.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim so applying the upper topsail yard to the topmast and sail, that when the former is lowered it shall rotate and wind the sail about it.

I *claim* combining a windlass yard with the upper topsail yard, and applying the windlass ropes to the outer ends of the windlass yard, and to the topsail yard and topmast, substantially as specified; whereby when the upper topsail yard is lowered the sail will be furled, and when raised unfurled, as specified.

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No. 12,316.—JNO. HOBBS.—*Improvement in Rain-Staff Screws for Ship-Carpenters.*—Patented January 30, 1855. (Plates, p. 137.)

*Claim.*—The arrangement of the screw-stems *C D* and *E F* passing through the rain-staff *A B*; the sharp-threaded screws *D* and *F* forced into the timber or side of the vessel by the lever *h* inserted in the aperture *k*; and the nuts *g g* moved by the lever *i* to force the rein-staff towards the vessel, together with the set-down *L* on each screw, for the purpose of inserting wedges between it and the edge of the plank, to bring the plank into place for spiking on the side of the vessel. (See engraving.)

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No. 12,620.—THOS. BROWN.—*Improvement in Ships' Riding Bitts.*—Patented April 3, 1855. (Plates, p. 137.)

These bitts consist of tubes *c* provided with sufficiently broad flanges *d*, and bolted to the deck-beams *h*. These bitts save much space be-

tween decks, and ventilation and light can be admitted through the hollow tube *c* and opening *j* in the deck.

*Claim.*—The tubular metallic riding bits, when entirely secured to a single deck of a vessel, and arranged substantially in the manner and for the purpose set forth.

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No. 13,601.—JOHN S. ROBBINS.—*Improvement in Ships' Rudders.*—Patented September 25, 1855. (Plates, p. 137.)

The rudder A is hung from the stern-post B of a vessel, in a similar manner to the rudder commonly employed, but having little more than half the area. This rudder is operated by the usual steering-apparatus. The second rudder C is supported by brackets E and F. As the rudders depart from the midship position, (see dotted lines in figure 2,) one swings to one side and the other to the other; but, as they are always parallel to each, and both of the same area, they are always balanced and remain in any position as if they were locked, thereby relieving the helmsman, be the helm kept stationary or be it moving.

*Claim.*—Arranging the two rudders, and combining them by means of the arms *b b* and *b<sup>1</sup> b<sup>1</sup>*, and connecting-rods *c c*, substantially as and for the purpose herein set forth.

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No. 12,390.—FREDERICK HOWES.—*Improvement in Ships' Standing Rigging.*—Patented February 13, 1855. (Plates, p. 137.)

*Claim.*—Forming the shrouds and back-stays, or other standing rigging, in one continuous piece, and conducting the rope of which they are formed alternately through proper guides aloft and guides at the channels or chain-plates, as set forth. (See engraving.)

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No. 13,518.—THOMAS BATTY.—*Improvement in Supporting Ships' Top-masts.*—Patented September 4, 1855. (Plates, p. 137.)

The nature of this invention will be understood from the claim and engravings, where A represents the lower mast and B the top-mast.

*Claim.*—The employment, for the purpose of supporting or assisting to support the topmast or topgallant-mast, and superincumbent spars and rigging, and for setting up the same when necessary, of the diagonal double screwed iron-stays *c*, constructed and applied as described, between the cap of the lower mast and the heel of the topmast.

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No. 13,861.—THOMAS BATTY.—*Improvement in Suspending Ships' Yards.*—Patented December 4, 1855. (Plates, p. 137.)

By hanging the yard in the manner represented in the engravings, great freedom of movement is obtained, and the yard is thrown well out from the mast, so as to keep the sail clear, and yet well supported. A represents the lower mast; B, the topmast; C, the yard.



*Claim.*—The arrangement of the yard, the beam *i*, and the crane *e e'*, substantially as and for the purposes set forth.

No. 12,718.—JAMES EMERSON.—*Improvement in Ship's Windlass.*—Patented April 17, 1855. (Plates, p. 138.)

By turning shaft E in the proper direction, shaft B will be rotated by means of gearing D C, and the part pinions G G<sup>1</sup> will alternately gear into the sectors I I, and one sector will be moved in the direction of the arrow, and then the other, and the pawls J of the sectors catch against the chains L and move them over the pulleys H. The movement of the chains is continuous, because the part pinions are rather more than half pinions, and one catches its sector before the other pinion leaves its sector. When the pinions leave the sectors, the sectors are thrown forward, (so as to be ready to be caught by the part pinions,) by means of levers K, the upper ends of which are operated by pins *h*<sup>1</sup> catching into forks *h*; and the lower ends of the levers are thrown forward, and also the sectors, in consequence of pins *g* fitting in slots *f*. Both pulleys H H are worked precisely alike, so that two chains are drawn up. Using the small gearing N O, by reversing the motion of shaft E, the speed is increased.

*Claim.*—The combination of the geared sectors I I, with pawls J attached, the part pinions G G<sup>1</sup>, levers K, and pulleys H; the above parts being constructed and arranged substantially as herein shown, and for the purpose as set forth.

No. 13,262.—JOHN B. HOLMES, assignor to JOHN R. PRATT.—*Improvement in Ships' Capstans.*—Patented July 17, 1855. (Plates, p. 138.)

F is a round plate secured to spindle C, and supports two spur-wheels G G<sup>1</sup>, which are in gear with the toothed rim H H of the barrel B, and also with pinion I, which is in one piece with bevel wheel K, and both of them revolve loosely on the fixed spindle C. N are the cranks. A is the bottom plate, firmly secured to the bottom.

The inventor says: I make no claim to employ compound gearing for working capstans, for I am aware that gear wheels have been applied and combined before for the purpose of overcoming a variable resistance in capstans; nor do I claim the shape, form, or construction of the different parts, when separately considered.

But I *claim* the arrangement of the stationary drum-head D, in relation to the stationary base and spindle C and movable body B, the same being moved by gearing and cranks, as set forth and described.

No. 13,393.—PETER H. JACKSON.—*Improvement in Ships' Winches.*—Patented August 7, 1855. (Plates, p. 138.)

When handle *b* is depressed, ratchet-wheel 3 will also be moved with it, and pawl 4 will retain the motion thus given, and raising the handle, the point 10 of pawl *a* will ride over the ratchet-teeth 3, and then drop

thereinto ready for again being depressed, the point 11 acting as a counterpoise to keep point 10 in the teeth. But if the handspike and socket be turned over on to the other side of the ratchet-wheel, pawl *a* will fall over backwards, and point 11 will take the teeth 3 to rotate the same in the opposite direction, and point 10 will act as a counterpoise to keep 11 to the teeth. Pawl 4 has to be thrown under as before detailed, and ratchet-wheel 3 is ready to be rotated in the other direction.

The inventor says: I do not claim a pawl or pawls acting on their ratchet-wheels on either side of their centre carrying the same, neither do I claim applying a pawl hand-spike socket and retaining pawl to a ratchet-wheel, as this has been done, but only for rotating the said ratchet-wheel in one direction; and I am aware that pawls with counterpoise weights, to make them act upwards instead of downwards, are well known.

I am also well aware that winches and windlasses have been fitted by means of external ratchets and hooks, and internal ratchets and pawls applied at the outer end of the head, so that the same can be rotated in either direction. Therefore, I make no claim to rotating winches or windlasses in either direction, as this is well known and in common use.

It will be evident that my arrangement of ratchets and pawls has important advantages over such arrangements, because there is nothing to prevent a rope being easily wound around the winch or cast-off; whereas, in cases where the hand-spike is applied at the outer end of the winch or windlass-head, the same has often to be pulled out to allow the rope to be taken off, but in mine that is not the case; and, besides this, there is more strain on the shaft carrying the parts when the hand-spike is applied at the end thereof, than when it acts close up to the bit or timber carrying said shaft. I am not aware that a double-acting pawl has ever before been applied beneath a ratchet-wheel, and fitted with the counterpoise weight, to make the same act upwards, and also allow for turning said pawl under to change sides, when said pawl is combined with a double-acting pawl, set on, and moving with, a hand-spike and socket, (or lever,) and applied to the upper part of said ratchet-wheel in such a manner as to rotate the same in either direction, thereby producing a double-acting purchase with only one ratchet-wheel, and obtaining the advantage specified.

I *claim* the reversible or double-acting pawl 4, below the ratchet-wheel, in combination with the double-acting pawl *a*, to which power is applied to rotate said ratchet-wheel in either direction, in the manner as specified.

No. 13,506.—JAMES EMERSON.—*Improvement in Ships' Windlasses*.—Patented August 28, 1855. (Plates, p. 138.)

If the chains are to be drawn up slowly, shaft I is turned so that wheel L will turn with shaft I, and turn the large wheel C on shaft B. If the chains are to be hoisted with a quicker motion, shaft I is turned in the reverse direction, so that wheel M will turn with shaft I, and turn the smaller wheel D on shaft B.

I *claim* the gearing C D L M and the ratchet N and O on the shaft I, when arranged substantially as shown, for the purpose of operating the shaft B of the windlass, with a quick or slower or vibrating motion, and with a corresponding degree of power; one set of gear-wheels C L being independent of the other set D M, and allowing the windlass, in case of the breaking of one, to be operated by the other.

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No. 13,612.—JNO. B. HOLMES, assignor to JNO. R. PRATT and JNO. B. HOLMES.—*Improvement in Ships' Windlasses*.—Patented September 25, 1855. (Plates, p. 138.)

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I make no claim to the application of wheels, or gearing of any description, to ships' windlasses, for the purpose of occasionally increasing their power, as such has been done before, and in particular has been described by Hindmarch and others.

Nor do I make any claim to the stationary or revolving shaft or spindle or spindles of the chain-barrels A A<sup>1</sup>; nor do I claim any of the parts constituting my windlass, when detached or separated.

But I *claim* the arrangement of the shaft E with its gearing-wheels F and G and the clutch-coupling H, in relation to the drums of the windlass and their gearing, as set forth, whereby the one or both drums may be moved with a quick or slow motion, or the one drum may be moved with the quick and the other with the slow motion, at the same time.

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No. 12,140.—HENRY J. ROGERS.—*Improvement in Signal-Flags*.—Patented January 2, 1855. (Plates, p. 138.)

This improvement consists in placing diagonally the distinguishing marks of the flags, the symbols forming a distinct mark in a calm similar to those exhibited by the flags in a stiff breeze, as apparent from the figures.

*Claim*.—The square signal-flag with diagonal symbols, so that the same flags will answer for signals in a high wind and in a calm, as set forth.

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No. 12,250.—ABIJAH R. TEWKESBURY.—*Improved Steering-Apparatus*.—Patented January 16, 1855. (Plates, p. 138.)

By rotating the steering-wheel I, the four gears  $g g g^1 g^1$  are set in motion; and as the pinions  $i$  of two of them work in the stationary curved racks D of the case C, they will produce a rotative movement of rudder-head A.

In case the rudder should be lifted by a heavy sea, the pinions will be free to rise in the racks, and no damage will ensue.

*Claim*.—Arranging the rudder-head within a concentric or surrounding frame or case C fastened to the deck, and applying on the top of

the rudder-head and within the case, as described, a driving shaft-gearing and one or more curved racks of internal cogs; the whole to be operated by a hand-wheel applied to turn the shaft, substantially as specified; the said arrangement of parts rendering their combination not only exceedingly efficient and compact as a steering apparatus, but one wherein the lifting or raising of the rudder by a wave or sea is not liable to injuriously derange the machinery.

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No. 12,488.—JESSE REED.—*Improvement in Steering Apparatus*.—Patented March 6, 1855. (Plates, p. 139.)

A is the rudder-head; D D are pedestals arranged on stanchions E E, projecting upwards from deck F. The pedestals are connected to the stanchions by means of studs *b* and slots *a*, thus allowing of a self-adjustment to the fore-and-aft movement of the rudder when struck by a heavy sea, and also allowing the pedestals to rise up on said studs, so as to yield upward when struck in that direction. Thus the force of the sea is expended on the rudder, by allowing the rudder to yield to it. M M are two guard-rails lying parallel to and in contact one with each half of the divided nut. These bars are also supported in the pedestals so as to move with all the other moving parts when yielding to the spring of the rudder. Wedges *n* serve to press these bars hard up against nut I. Thus the screw-shaft is relieved from the workings of the rudder in a heavy sea, and is prevented from being bent out of its true line, which would strip its own or the thread of the nut or bolt.

*Claim*.—Combining with the divided nut the adjustable guide and guard-rails, substantially in the manner and for the purpose set forth.

Also, the supporting of the pedestals upon the stanchions by means of long pins or studs passing through oblong slots in the pedestals, and into said stanchions, for the purpose of allowing the pedestals and several parts connected therewith to move fore or aft, up or down, to accommodate themselves to any rising or falling, or springing or bending of the rudder-post, substantially as described.

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No. 12,909.—J. W. HOAGLAND.—*Tree-Nail Machine*.—Patented May 22, 1855. (Plates, p. 139.)

The piece X of which the tree-nail is to be made is entered between the first pair of feed-rollers L. The piece is shaped by the cutters, and thus received by the second pair of feeding-rollers, the pressure of which latter rollers is governed (for the purpose of accommodating the varying size of the tree-nail) by oval buttons *b* on rods R, which latter are moved and governed by levers D bolted and projecting from circular plate B. The buttons are hinged upon a cross-piece *c* on the stanchions E. When the gauge or pattern causes a motion of the arms D of the plate, it moves also the levers R, and, turning the buttons, forces apart the boxes S of the feed-roller shafts, and the spiral springs force them together again. In each box C is a stationary pin protruding

through slots *a* in the plate. The follower H is supported on ways *z*. The chain band W is connected to the follower, so that when the follower is thrust back by the tree-nail striking against it, it will turn the wheel J and pinion K, and move rack T, which carries the gauge or pattern U. When the tree-nail drops, the weight will draw the follower back again towards the head of the machine. Upon one of arms D is screwed a perpendicular stem Y with a slot at its fastening, so that it can be graduated. The bottom of the stem rests, by means of a friction roller, upon the pattern U, which, in moving back and forth, raises or depresses the levers D of the circular plate; and this motion, by means of slots *a*, converges or diverges the cutters, and thus gives the tree-nail the desired shape.

*Claim.*—1st. The use and employment of the circular plate B, with its diagonal slots *a*, to concentrate or expand the cutters, and thus regulate the size of the tree-nail in the manner above described.

2d. The use and employment of the follower H, with its apparatus of band and wheel to govern the gauge U, so that the tree-nails may be made uniform in size, arranged and constructed substantially as above described.

3d. The use of the levers R and their apparatus of ovals *b* to separate the feed-rollers or allow them to approach each other for the purpose of holding the tree-nail firmly, while it is being enlarged or diminished, in the manner above shown.

4th. The use of the pattern-gauge U and the stem Y to govern the circular plate.

No. 13,463.—JOSEPH HYDE.—*Improved Apparatus for Vessels to indicate their locality when they sink, and to supply a means of raising them.*—Patented August 21, 1855. (Plates, p. 139.)

The cord *g* being connected by one end with the buoy *b*, and by the other with the spool *f*, which makes part of the buoy, and wound up on the body of the spool, which is free to turn on the arbor of the buoy, as the vessel sinks, the spool will turn to give out the cord, that the buoy may remain on the surface of the water, notwithstanding it continues to be connected with the vessel. The sockets *h* are formed with recesses *l* for the insertion of a metallic grapple *m* provided with two catches *o*, which have their fulcrum at *p*, and which work in mortises in the grapple, and are pressed outward by a suitable spring. The chain or cable *q* is attached to the grapple-loop *n*.

*a* represents part of the vessel.

The inventor says: I am aware that on some occasions, in throwing guns, anchors, and other heavy articles overboard to lighten ships at sea, cords with floats have been previously attached, to indicate their locality when sunken; but I am not aware that buoys specially provided have ever been arranged and connected with a vessel or anything within it so as to remain so connected, and give out the connecting cord to remain on the surface of the water as the vessel sinks, to indicate its locality, and afford the means of forming the necessary connection for raising the vessel, &c., to the surface; and therefore I do not

claim, broadly, the use of floats to indicate the locality of sunken vessels.

I do not wish to be understood as limiting myself to the special construction of the buoys, nor to the special manner of arranging the cord which forms the connection between the buoy and the socket or the hose, nor to the special mode of attaching the socket to the vessel or safe, nor to the mode of making the flexible bags or camels and hose, nor to the special construction of the grapple, as all these may be varied without changing the character of my invention.

I *claim* the mode of operation for indicating the locality of sunken vessels by means of a buoy or buoys, connected and combined with the vessel by means of a cord or cords, or the equivalent therefor, attached to the buoy, and a windlass or equivalent thereof, and connected with the vessel, or some valuable within the same.

I also claim the mode of operation for connecting cables or chains with sunken vessels or articles therein by means of the socket, or any equivalent therefor, operated by the buoy-cord, substantially in the manner described.

No. 12,436.—HENRY V. CORBETT.—*Improved Mode of Raising Sunken Vessels*.—Patented February 27, 1855. (Plates, p. 139.)

A hook *a* is attached to the bottom of the buoy B of sufficient strength to hold the buoy to the vessel, and on the opposite side there is attached another hook *b*, to which is fastened the weight W by a hole *h*, to the top of which weight is attached a hawser. The weight carries the buoy down, it being guided by the guy-lines attached at *g g*; when arrived at the bottom the buoy is to fasten itself to the guards or other part of the sunken vessel, which is to be facilitated by gently raising the weight. The weight is then drawn up.

The inventor says: I do not claim the mode of raising sunken vessels by the use of casks filled with water, which is to be pumped out after the casks are attached to the vessels.

Nor do I claim the mode of so doing by means of expansive buoys, which obtain their bouyant power by inflation after they are sunk and attached to the vessel.

But I *claim* the mode of raising sunken vessels by means of casks or buoys, previously filled with air and sunk by a weight, which is readily detached and raised to the surface after the buoy is secured to the vessel, substantially as set forth.

No. 12,458.—ALEXANDER KIRKWOOD.—*Method of Pumping Water out of Vessels*.—Patented February 27, 1855. (Plates, p. 140.)

The box A B C (open at the bottom) is fitted to the bottom of the vessel, and its inside communicates with the water in the vessel by an opening *a a*; from F upwards extends the pumping cylinder G; the part C of the box communicates with the water outside the vessel by means of a hole through the bottom of the vessel. The action of the pump will draw the water in at *a* through valve-opening D, and force it

out through valve-opening E, space C, and out of the hole in the bottom of the vessel. Figure 1 is a side view, and figure 2 a bottom view of the pump.

*Claim.*—The attachment of the described pump, or of any ordinary force-pump, to the bottom of a vessel, so as to force water out at her bottom, thereby avoiding the labor and expense of raising the water above the level of the water the vessel floats in.

No. 12,506.—ELMER FOSTER.—*Improvement in Hoop-Jacks for Sailing Vessels.*—Patented March 13, 1855. (Plates, p. 140.)

1 is the circular space occupied by the mast; A the space for the lower throat-halyard block; 5 the rollers forward and aft of the mast, to prevent the jack from binding, and to play or run on the mast; 6 the line to which the hoops are to be seized, as they are in length on the mast-rope of the sail, that the forward part of the hoops may be lifted or hoisted with the after part horizontally and at the same moment. This hoop-line is connected with the band by a clevis hung on the forward bolt 3, to which it is properly rigged; 7 is the brace-line and hook connected to the after screw-bolt 3, which prevents the halyards from binding against the edges of the block, by keeping the block perpendicular while being hoisted; 8 is the clevis, to put the weight near the end of the bolts to prevent them from bending.

*Claim.*—The arrangement of the hoop-jack, with the lower halyard-block, the brace-line, clevis and gaff-hook, clevis and hoop-line extending down to the foot of the mast and connected to each sail-loop, as set forth.

No. 13,006.—WILLIAM R. JACKSON. *Improvement in Floating Cabins for Steam and other Vessels.*—Patented June 5, 1855. (Plates, p. 140.)

By removing the chain connection between the hooks *a* and the rods *f* passing up through the deck-timbers the cabin will be detached from the deck, and by means of raising the beams A (as indicated by dotted lines) can be launched. The cabin is made sufficiently strong and water-proof, to serve as a life-boat.

I *claim* the construction of a deck or saloon cabin of a steam or other vessel, substantially as described, so that it shall admit of being separated from the hull, and form in itself an escape or life-boat, as set forth.

No. 13,030.—ELISHA FITZGERALD.—*Improvement in Buoys for Raising Sunken Vessels.*—Patented June 12, 1855. (Plates, p. 140.)

The nature of this improvement will be understood from the claim and engravings.

I *claim* the attachment to the air-bag A of an escape-valve (figure 4) B *c*, to prevent its bursting when, in consequence of the rising of the sunken ship, the pressure of the water around the bag is partially relieved, in the manner substantially as described

## VIII.—MATHEMATICAL INSTRUMENTS, ETC.

No. 13,800.—NATHANIEL S. SAXTON.—*Improvement in Machines for Adding Numbers*.—Patented November 13, 1855. (Plates, p. 141.)

The numbers from 0 till 1750 are marked in a spiral line on the face-plate, as indicated by the dotted spiral line in fig. 1. The marginal index on the rear side of the instrument consists of the numbers from 0 till 100, on a circle as indicated in fig. 2. To add, for instance,  $32+20+9$ , the finger is to be placed on the prominence at 32 with O in the opening for reading, and the notched wheel B is to be rotated in the direction 30, 20, &c., until the finger fetches up at letter O. 32 is thus added, and takes the place of O in the opening; then the finger is to be placed on the prominence at 20, rotated as before, and the sum of  $32+20$ , i. e. 52, appears in the opening just on the left of the gnomon G. Hence, to add any number requires merely the rotation of the notched wheel in a direction retrogressive to the numbers of the marginal index from the number to be added to O. After each addition, the sum of all the numbers added stands in the opening just on the left of the gnomon. The movement of the gnomon is greater than to coincide with the numbers less than 1000, so that when the sum is 900, a part of 1000 appears; but these parts of numbers are not to be noticed in reading.

The inventor says: The retrograde motion of wheel No. 1 may, in some cases, be performed by a weight or spring; but that part is not claimed to be patented.

I *claim* in machines for adding numbers the spiral scale of numbers, combined with the traversing gnomon, substantially in the manner and for the purpose set forth.

No. 13,623.—E. K. REYNOLDS.—*Clock-Escapement*.—Patented October 2, 1855. (Plates, p. 141.)

The nature of this improvement will be understood from the claim and engravings. D is the balance and A the escapement-wheel, and B the crutch.

*Claim*.—Constructing the staff *d* of the balance with a spiral groove *e*, and so arranging the balance that the point of the lever *c* will work in the said groove, and give the requisite motion to the balance, substantially as described.

No. 13,341.—JNO. WILLIAMS.—*Improvement in Calendar-Clocks*.—Patented July 24, 1855. (Plates, p. 141.)

A receives a continuous rotary motion, completing its revolution once in a day; wheel B carries the hand indicating the day of the month, and has thirty-one teeth on its periphery, and is moved one tooth every day by pin *a* on disc C secured to wheel A, and is prevented from



moving more than one tooth by spring-roller pawl  $p$  engaging with its teeth. The above movement completes the revolution of wheel B in each month of thirty-one days; but at the termination of the shorter months the said wheel has not completed its revolution by so many teeth as the number of days of the month is less than thirty-one. In order to bring the hand to the first day of the month (on the dial) after the lapse of a short month, the following means are employed: 1, 2, 3 are three sliding teeth attached to the front face of wheel B, and three pins  $a^1 a^2 a^3$  are secured on disc C. The teeth 1, 2, 3 are attached to arms  $b^1 b^2 b^3$ , which are pivoted to wheel B in such a manner that the teeth can severally be thrown outwards so as to gear with  $a^1 a^2$  or  $a^3$ . For this latter purpose there are arranged four pins  $k$ ; one of which, during February, is caused by the movement of D on the arbor of B to come in contact with, throw out, and hold the sliding-tooth 2 to its operative position, so that at the termination of the month, when it arrives opposite the disc D, it will be acted upon by one of the pins  $a^1 a^2 a^3$  of said disc. The next backward movement of wheel D, which takes place some time in March, causes the pin  $k$  to pass tooth 2, and allow it to be thrown back by its spring  $c^2$ , where it remains inoperative till February of the next year. Near three of these pins  $k$  are three pins  $l$ , but near the fourth there is none. One of the pins  $l$ , during the February of every year except leap year, comes into operation on the sliding-tooth 3 simultaneously with the action of its contiguous tooth  $k$  upon the sliding-tooth 2; but during leap year the tooth 3 remains inoperative, owing to the absence, near that pin  $k$ , which acts during leap year, of a pin  $l$  to throw it outwards.

The inventor says: I claim completing the revolution of the wheel B, at the end of the shorter months, by means of sliding-teeth 1, 2, 3, which are suitably attached to the said wheel, and severally or collectively, as required, brought into such positions as to enable them to be acted upon by the teeth on the daily revolving wheel A by means of the "four-year wheel" D, which is on the same arbor as, but independent of, the wheel B, the said wheel D acting upon the said sliding-teeth by means of its forty-eight projecting and receding divisions, and by pins or teeth arranged upon it, as described, and being for that purpose moved one forty-eighth part of a revolution, independently of the wheel B, for every revolution of the said wheel B, substantially as set forth.

But I do not claim the method of giving motion to the wheel D, as that has been before employed for a similar purpose.

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No. 13,993.—HENRY M. PARKHURST.—*Improvement in Proportional Dividers*.—Patented December 25, 1855. (Plates, p. 141.)

In this proportional divider the secondary legs C C<sup>1</sup> can, when the primary legs A A<sup>1</sup> are closed, be turned through a space of about 180°, and their points will remain accurately together; and if the secondary legs be placed together at any angle with the primary legs, their points will always maintain the same proportional distance, whatever may be the opening of the primary legs. The ratio will always be that of  $c d$ ,

$cf$ ;  $cf$  being the effective length of the primary legs, and  $cd$  the distance from the primary joint of the point in the primary by-cut, by a perpendicular from the point of the secondary leg, as illustrated. The pointer E indicates the distance on the scale F that the secondary legs are moved, and thus they can be set to give the desired proportional length.

*Claim.*—Providing an ordinary pair of dividers with the secondary legs, which have their joints equi-distant from the primary joint, and at right-angles thereto, substantially as and for the purpose set forth.

No. 12,855.—CHARLES T. CHESTER.—*Improvement in Connecting Clamps for the Plates of Galvanic Batteries.*—Patented May 15, 1855. (Plates, p. 141.)

Figure 1 represents a top view, and figure 2 a perspective view. The clamp  $C^1 C^2$  is used to insert a duplicate plate in the battery fluid, while the other is removed. Thus  $C^1$  is placed upon the insulating rod A, (as shown in dotted lines in figure 1,) and held in that position by screw  $e$ , while the auxiliary zinc-plate  $Z^2$  is screwed into clamp  $C^2$  so as to dip into the same acid into which Z dips. Z is then removed or again replaced, and the battery current will not have been disturbed.

*Claim.*—The arrangement herein described for fastening and connecting the battery-plates, viz: Clamps B, of brass or such other metal as will alike answer the purpose of the arrangement, attached to the insulating bar A of wood, commonly used in Smee's battery, in such manner that the battery-plates Z P clamped to them shall be separate from the wooden bar, and the solution be prevented from finding its way by capillary attraction to the wood, and which shall by their form allow of an easy removal and replacement of each separate plate, without the disturbance of any other part of the battery arrangement, as herein above set forth.

No. 13,560.—AMOS ABBOTT.—*Improvement in Horometers.*—Patented September 11, 1855. (Plates, p. 141.)

The arc of the circle A B C D is divided into degrees and half-degrees, numbering from the point C, which represents the north pole. On one side of zero is written "south declination," on the other "north declination," corresponding to the declination. The polar distance also is marked on the same arc with  $90^\circ$  at the point C. From the centre O a right line is drawn to the point B. It represents the equator, and it is divided into a scale of a hundred equal parts. Parallel to this line are drawn right lines, as many as may be necessary, from the division of degrees on the arc, cutting the line O C at right-angles, and extending to the line A D. These lines are projections of altitude, and are numbered on the line O C, and also on A D. Across these lines of altitude, on each side of the line O C, are drawn a horizontal projection of lines of longitude as far as is necessary. These lines can be projected by measuring off the distance from the line O C of the several points of the line on the lines of altitude, and then drawing a line through the several points. The distance of any point of the line of longitude

from line O C may be found by the following formula, radius being one: line of longitude  $\times$  cosine latitude = distance from line O C on the given latitude. The arm O K turns on the centre O, and extends to the arc of the circle, on the end of which is a vernier: this arm has a straight edge on a line with the centre, around which it turns. Accompanying the instrument is a horse-shoe magnet E F G, with a scale of cosines or coaltitudes on one side for measuring angular distances compensating for refraction, and on the other side a scale of equal parts H J.

For example, to find the time of day by the altitude of the sun is a case where three sides of a triangle, viz: polar distance, coaltitude of the sun, and the coaltitude of the place of observation, are given to find the angle at the pole, which angle, turned into time, gives the time from apparent noon. The way to find this by means of the instrument is to set the zero of arm O K at the polar distance for the given time, and slide the scale of coaltitudes along the straight edge of the arm, and at right-angles to it, till the coaltitude of the sun on the scale meets the latitude of the place of observation. The degree of longitude crossing the latitude at that point will be the angle required; and where the straight edge of the arm crosses the latitude of the place, will be the time of the rising and setting of the sun, for it represents the line of illumination when the sun is at the given polar distance.

I do not claim the invention of any part of the apparatus connected with the instrument for the purpose of taking altitudes of objects, or of solving of problems in plane trigonometry; nor the tables on the back of the instrument; nor the projection of any of the lines as such.

But I *claim* an instrument upon which are delineated projections of latitude and longitude within an arc of a circle, combined with the arm O K and scale F G, or their equivalent, substantially in the manner described, for the purpose of solving useful problems in spherical trigonometry, as above mentioned, without the usual mathematical calculations.

I also claim the employment, in mathematical instruments, of magnetism, to keep a slide at right-angles, or any given angle to a straight edge, and at the same time allowing it to slide freely upon the straight edge, substantially as set forth.

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No. 13,584.—JOHN STINSON.—*Improved Instrument for Determining Latitude and Longitude*.—Patented September 18, 1855. (Plates, p. 166.)

For observing a longitude, (observation supposed to be taken from the stars,) the handle B is taken from the hook P, and the face of the circle is pointed to the polar star until the sight is taken at the angle of the cross-arm G and the angle at the hub for the purpose of getting the meridian; then the circle is turned until the arm G draws a parallel from the pole star to the star in Ursa Minor which is nearest the pole star; and when that is obtained, the thumb-screw S is fastened to maintain that bearing. Figure 4 shows the manner of elevating the instrument. To get the latitude the tube R is directed to the polar star. To

get the latitude and longitude by the sun, the altitude of the sun is obtained by turning the circle until the sun shines through the tube R. This is known by the ray falling upon the hand or any plate held at the periphery of the circle.

E is a surveyor's compass.

*Claim.*—The use of the circle C, with its shaft or handle, provided with the cross-piece G and the cross-piece H, or their equivalent; the whole being suspended from, at, or near the centre of the circle, by means of the plumb-wire and rod I; which rod is jointed so as to move freely in the plane passing through the axis of the circle, the whole being for the purpose above described.

No. 12,384.—HAMPTON W. EVANS.—*Improvement in Spirit-Levels.*

Patented February 13, 1855. (Plates, p. 166.)

This level can be used for levelling, plumbing, grading, and battering—L P G and B. By turning letter L towards the spring-catch H it will be set for a level, and the screw *g* at L is used to adjust the level; by turning the screw once round, the crescent-shaped catch E (with the points turned up to fit in a V-shaped groove *c* on the under side of the revolving plate) is loosened, and is held in its place by a rug *f*, into which the screw forces and holds the catch-block permanently. When P is turned next to the spring-catch, it is then set for a plumb-rule, and is adjusted by the screw *g* at P, in the same manner as already described and set forth, etc.

The inventor says: I do not claim the disc-plate, or conic centre, upon which it revolves, as new; but, in connexion therewith, I *claim* the crescent-shaped sliding or adjustable stops and spring-catch, in combination with the grooved disc and set-screws, or their mechanical equivalents, the whole being arranged and constructed in the manner and for the purpose described.

No. 13,162.—ROBERT D. DWYER.—*Improvement in Attachments for Lightning-Rods.*—Patented July 3, 1855. (Plates, p. 166.)

The lightning-rod is passed through the holes *g g* and notch *d*, when the respective parts of the rod-holder (*e i f* and A) will be securely fastened together, and the rod be securely fastened to them.

*Claim.*—Constructing a lightning-rod holder of but two parts, of such a form that the lightning-rod will connect them to each other, at the same time that it combines itself securely with them, substantially as represented and set forth.

No. 13,833.—LOUIS YOUNG.—*Improvement in Revolving Measuring-Wheels.*—Patented November 20, 1855. (Plates, p. 166.)

To use this revolving measure, the wheel *a* has to be turned so that the pointer *g*, attached to the casing A, corresponds with the division marked zero on said wheel; then the cover *w* has to be opened, and

the wheel B to be turned until the division marked zero thereon corresponds with the lower edge of opening C, in the side of casing A. Then the instrument is to be placed upon the substance to be measured, so that division zero of wheel *a* comes to the edge of the substance; and the instrument is then rolled over the same, when the measure can be read off the wheel B, through opening C. The count-wheel B is turned one tooth in each revolution of wheel *a*, by means of pawl *m*, cross-head *d*, and connecting-rod *n*, one end of which latter is pivoted eccentrically to the outer end of shaft *h*.

The inventor says: I do not claim the manner of transmitting the motion from the measuring-wheel *a* to the counting-wheel B, but I *claim* the arrangement of the box containing the count-wheel B, in connexion with the stock carrying the measuring-wheel *a*, in such a manner that said box is made to serve as a convenient handle for working the instrument.

No. 13,603.—ROBERT B. TOLLES.—*Improvement in Optical Instruments*.—Patented September 25, 1855. (Plates, p. 166.)

The piece of glass B, (of refractive index 1.50,) of one inch in length and of slightly conical form, has convex ends, the convexity of the smaller end corresponding to a radius of 0.44 inch, and of the larger end to a radius of 0.55 inch. By placing this solid, transparent piece at a proper distance within the focus of any object-glass, it will act as a negative eye-piece, the two refracting surfaces acting as two equivalent separate lenses with a focus formed between.

The inventor says: I do not claim the invention of a solid optical piece consisting of two exterior refracting surfaces, when such surfaces operate as a single lens of greater or less thickness.

But I *claim* the construction of a solid optical piece, the exterior refracting surfaces of which shall produce the effect of two equivalent lenses, said surfaces being at such a distance from each other as shall form a focus or image within the solid transparent substance, thereby suppressing two refracting surfaces, substantially as set forth.

No. 13,451.—JOHN C. BRIGGS.—*Improvement in the Application of the Conical Pendulum to Time-keepers*.—Patented August 21, 1855. (Plates, p. 166.)

This pendulum oscillates in a circle or ellipse, its motion being kept up by the spindle B, coming up from below within the circumference described by the pendulum ball A suspended from standard C.

*Claim.*—The application to clocks, time-pieces, or other machinery, as a regulator, of a rotary or conical pendulum, the rod of which is flexible, and attached at its upper end to a fixed point above, and without the described cone, and extending only below the point of support, the pendulum to be kept in motion by a spindle coming up from below, substantially as described.

No. 12,196.—AARON D. CRANE.—*Improvement in Torsion Pendulums for Time-Pieces.*—Patented January 9, 1855. (Plates, p. 166.)

The nature of this improvement is apparent from the engravings.

*Claim.*—The method of compensating the torsion pendulum, by so constructing it, substantially as herein set forth, as that its weights may swing from the centre of their motion in the ratio of the increase of their speed, thus making all its vibrations isochronal.

No. 13,615.—BERNARD GOETZ.—*Improvement in Corrugated Reflectors.*—Patented October 2, 1855. (Plates, p. 143.)

The silver-plated corrugated plate A B is set in a casing O W of wood or other material, and covered in front by a sheet of glass S, plain or fluted. This reflector is placed on the outside of a window (of a room darkened by the contiguity of buildings or other cause), at an angle of 45° or other suitable angle, so as to throw the rays of light from above into the room.

The inventor says: I do not desire to claim reflectors generally to thrown light into darkened rooms, or such as have been used for lamps.

But I *claim* a reflector A B having the peculiar form of grooved or fluted undulating surface above described, and the converging grooves  $a\ b\ c\ d$ , &c.,  $a^1\ b^1\ c^1\ d^1$ , &c., and crossed transversely by the other series of parallel grooves  $t\ u\ v\ w$ , &c.,  $t^1\ u^1\ v^1\ w^1$ , &c., on plate I I, in the manner and for the purposes substantially as described.

No. 12,929.—LEROY S. WHITE and LEWIS WHITE.—*Improvement in Telegraphic Key Apparatus.*—Patented May 22, 1855. (Plates, p. 143.)

A, wooden frame;  $c\ c^1\ c^1$  metallic posts, positive and negative wires being connected with the posts  $c^1\ c^1$ ; D and E wooden bars, the latter being embraced by a metallic saddle F, which extends between each two posts; G metallic bar connecting the saddles, it being attached to one and insulated from the other, which is electrically connected with rods L L, the saddle-bars being respectively electrically connected with the two positive and negative wires of the battery;  $x$  insulator between G and one of bars F; H vertically sliding keys;  $a^1$  metallic key-bar supported by spring  $b^1$ , the hole in bar G, through which the key-bar slides, being sufficiently large not to permit the key-rod to come in contact with the bar; K friction slider sliding on the key-bar with sufficient friction to cause the key, not only when moving downwards, to press and keep it against bar G, but also, when moving upwards, to raise it from bar G and carry and keep it in contact with bar D, the slider being made vertically of a width less than the distance between G and D, while its length is such as to entirely straddle the hole in G and rest on said bar G, when it (the slider) is forced downwards. By this friction slider the electric connection between the key and bar G will be alternately closed and broken. The lower end of

the key-bar is provided with strips of ivory, the lowest strip having a notch into which spring O falls when the key-bar has arrived at its highest position. Spring O extends from metallic rod L, which latter is at one end supported by an insulating post M, while its other end has a metallic connection N with saddle-bars F. The edge of spring O works against the side of the lower part of key-bar  $a^1$ ; and while it is in contact with one of the ivory strips, the electric current will be broken, but when in contact with the metal, it will be closed. The relative lengths of the ivory strips and the metal between them serve to produce a character indicative of a letter of the alphabet, as in other telegraphic registers.

The inventors say: We are aware that it is not new to close and break an electric circuit by means of a moving piece of metal, having strips of ivory or other electro non-conducting material inserted within it, and made to operate against a metallic spring connected with one pole of an electric battery, while the said moving piece of metal is connected with the other pole thereof; therefore, we do not claim such to be our invention, but we do *claim*, in combination with a sliding-key circuit breaker of such description, a friction slider, a metallic bar G, and an insulated stop-bar D, or the equivalent thereof, the whole being made to operate together, substantially as specified.

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No. 13,389.—JOHN N. GAMEWELL.—*Improvement in Apparatus for Discharging Atmospheric Electricity from Telegraph Wires*.—Patented August 7, 1855; patented in England, September 15, 1854. (Plates, p. 143.)

The train of wires D passing over ivory studs  $c d$  forms part of the main circuit. This wire is composed of long pieces  $e f$  of inferior conductor (for instance iron) represented in strong broken lines, and of short pieces  $f h$  (represented in strong full lines) of superior conductor (for instance copper). The short pieces terminate in points  $h$ ;  $i$  is the usual main wire entering the office; the other end connects with one end of a thin sheet of platina, from whose other end a fine platina wire leads to the magnet. The points  $h$  are in close proximity (but without touching) to the points  $l$  of a series of superior conducting wires soldered to a copper trough E, to the bottom of which trough copper wires  $m$  are attached which enter the ground. On opposite sides and at a short distance from the platina plate  $j$  are placed two copper plates  $n n$ , insulated by brackets  $o$ , which carry them and the platina plate. These copper plates are studded all over their inner faces with points  $p$  of superior conducting metal, which are in close proximity to the platina plates, and they are connected with the trough by copper wires  $q$ , which are of such form as to yield when the boards A B are adjusted by the screws C.

The principle upon which this apparatus is constructed is, that atmospheric electricity will leap from one conductor to another, but that a galvanic current such as used in the working of the telegraph will not pass through the smallest space without a continuous conductor.

The points *l* and *p*, the trough *E*, plates *n*, and wires *q* and *m*, serve to discharge the atmospheric electricity. The points *h* and *l* are to be set in the closest proximity without touching during a highly electric state of the atmosphere.

The inventor says: I do not claim the use of discharging points connected with the ground to carry off atmospheric electricity.

I *claim* the method of obstructing the passage of atmospheric electricity along the line from one discharging point to another, or their equivalents provided for a similar purpose, by reducing the capacity of the conductor forming said line at and immediately after its junction with said discharging points *h h*, whether that reduction consists in the employment of one inferior conducting material or in reducing the dimensions of the conductor, as set forth, or any other equivalent method of reducing the conducting capacity of those parts of the line, thereby forcing the discharge of the atmospheric electricity from the points *h h*, as described.

No. 13,519.—ALEXANDER BOYD.—*Improvement in Telegraphic Tide-Gauges*.—Patented September 4, 1855. (Plates, p. 143.)

As the tide rises, the float *C* (not shown in the engravings) attached to the lower end of cord *e* is raised, and weight *H* rotates shaft *G* and moves the endless cord *v* around the pulleys *p p*; the piece *s* moves with the cord and removes one of the slides *k* (turning on pivots *l*) from its glass *j* in consequence of its striking projection *m* on the lower end of slide *k*. A colored light is thereby shown, which is intended to indicate a certain depth of water—for instance, one foot. As the float rises the next slide will be opened, indicating a depth of two feet, and so on. As the tide falls the piece *s* moves back and obscures the lights one after the other.

The inventor says: I do not claim the employment of a float and weight for indicating the height of water in channels and passages, irrespective of the mechanism shown for transmitting motion to the slides by which the lights are obscured and exposed, for they have been previously used.

But I *claim* showing and obscuring a series of lights *j* successively, so that the height of the water may be indicated by the number of lights visible by means of the slides *k*, provided with projections *m m* and the rod *s* attached to a rope or chain *v*, said rod *s* operating the slides, the rope or chain *V* working over pulleys *b*, and moved and operated by the shaft *G*, which receives its motion by means of the float *c* and weight *H*.

No. 13,655.—WASHINGTON ABRAM PEASLEE.—*Improvement in Telegraphs*.—Patented October 9, 1855. (Plates, p. 143.)

The engraving represents the batteries, ground connexions, main wires, helices, vibrating armature lever, etc., ready for operation, with the circuit broken at the point *H*<sup>1</sup> of the break-circuit key *8*<sup>1</sup>; it being understood that the battery *Z*<sup>1</sup>, having its platina pole connected with the ground by the wire *j*<sup>1</sup> to the ground plate *x*<sup>1</sup>, must have a ground



connexion for its zinc pole also, to complete its circuit and bring it into action. But this is not the case, as represented in the diagram; the wire H, leading from the zinc pole of the battery  $Z^1$ , not being connected with the point  $H^1$  of the break-circuit key  $S^1$ , consequently the battery  $Z^1$  is inactive.

The battery Z being connected to the ground-plate  $x$  by the wire  $j$ , leading from the ground-plate  $x$  to the zinc pole of the battery Z, which is connected with the break-circuit key S by the wire  $H^2$ , leading from the platina pole of the battery Z to the break-circuit key S, the main wire  $d$  being in connexion with the break-circuit key S, and the metal standard  $q^1$  and standard  $q$  being connected with the helices  $C^1$  by the wire  $d^4$ , and the helices  $C^1$  being connected to the metal standard  $q^1$  by the wire  $b^1$ , and the standard  $q$  being connected with the metal standard  $p^1$  by the wire  $a^1$   $a^1$ , and the standard  $p^1$  being connected with the helices  $B^1$  by the wire  $b$ , and the helices  $B^1$  being connected with the metal standard  $p$  by the wire  $d^2$ , and the standard  $p$  being connected with the break-circuit key  $S^1$  by the main wire  $d^1$ ; the point  $H^1$  of the break-circuit key  $S^1$  being the terminus of the unbroken connexions leading from the platina pole of the battery Z, and having no ground connexion at the point  $H^1$ , consequently the battery Z is inactive also. The point  $H^1$ , being the representative of the platina pole of the battery Z, being brought in connexion with the wire H leading to the zinc pole of the battery  $Z^1$ , and the platina pole of the battery  $Z^1$  being connected with the ground-plate  $x^1$  by the wire  $j^1$ , the circuit is complete, having the zinc pole of the battery Z connected with the ground-plate  $x$ , and the platina pole of the battery  $Z^1$  connected with the ground-plate  $x^1$ . The circuit being now complete, the current passes from the zinc pole of the battery Z, which is connected with the ground-plate  $x$ , to the platina pole of the battery  $Z^1$ , that is connected with the ground-plate  $x^1$ , charging and forming magnets at the same time of the helices  $B^1$  and  $C^1$ .

The helices  $B^1$  and  $C^1$ , being placed near enough to the metal arms  $B^2$   $B^3$  of the vibrating armature lever, to attract the metal arms  $B^2$   $B^3$  with equal force, the armature lever is drawn from its perpendicular position ("where it rests, touching the non-conducting points  $o^1$   $o^4$ ") against the metal-points  $o^2$   $o^3$ ; the metal-points  $o^2$   $o^3$  being connected by the wires  $c^4$   $c^5$  with the main circuit  $d$   $d^1$  at the metal standards  $p^1$   $q^1$ .

Ground connexions are formed between the helices  $B^1$  and  $C^1$  through the wires  $c^4$  and  $c^5$ , leading from the metal standards  $p^1$   $q^1$  to the metal points  $o^2$   $o^3$ , the metal points  $o^2$   $o^3$  being in contact with the metal linings  $ff$  of the armature lever, and the metal linings  $ff$  in connexion with the metal axles  $i$   $i^1$ , and the metal axles  $i$   $i^1$  in connexion with the metal standards  $k$   $k$ , and the standards  $k$   $k$  being in connexion with the ground-plates  $w^1$   $w$  by the wires  $l$   $l$ , two separate and distinct circuits are completed; the batteries Z and  $Z^1$  being separated by the ground connexions, and these ground connexions being complete at  $x$  and  $w^1$ , and at  $w$  and  $x^1$ . The current from the battery Z then passes from the zinc pole that is connected with the ground-plate  $x$  to the ground-plate  $w^1$ , which is now the terminus of the platina pole of the battery Z, which remains active in consequence of the zinc and platina poles having their respective ground connexions at the ground-plates  $x$  and  $w^1$ . The

current from the battery  $Z$  also passes from its zinc pole that is connected with the ground-plate  $w$ , which is now the terminus of the zinc pole of the battery  $Z^1$ , to its platina pole that is connected with the ground-plate  $x^1$ ; the battery  $Z^1$  also remains active, in consequence of the zinc and platina plates having their respective connexions with the ground at the ground-plates  $w$  and  $x^1$ ; the helices  $B^1$  being in the circuit actuated by the battery  $Z^1$ , and the helices  $C^1$  being in the circuit actuated by the battery  $Z$ . The helices  $B^1$  and  $C^1$  having been previously sufficiently near the metal arms  $B^2 B^3$  of the armature lever, so as to require the power of both helices,  $B^1$  and  $C^1$ , to draw the armature lever from its perpendicular position against the metal points  $o^2 o^3$ ; the power of the helices  $B^1$  not being sufficient in itself for such purpose *without the aid* of the helices  $C^1$ , and the power of the helices  $C^1$  being insufficient for such purposes *without the aid* of the helices  $B^1$ ; but the helices  $B^1$  and  $C^1$  retaining the armature lever in its position against the points  $o^2 o^3$  until the circuit of the battery  $Z^1$  is broken again by separating the point  $H^1$  of the break-circuit key  $8^1$  from the wire  $H$  leading to battery  $Z^1$ ; as soon as this is done, it destroys the attractive power of the helices  $B^1$ ; and the helices  $C^1$  not being able to retain the armature lever in its position against the points  $o^2 o^3$  by their power of attraction alone, the weight of the armature lever at the arm  $B^2$ , being equivalent to a spring in this case, causes it to leave the metal points  $o^2 o^3$ , and resume its perpendicular position against the non-conducting points  $o^1 o^4$ ; thereby breaking the ground connexions with the ground plates  $w$  and  $w^1$ , and thereby enabling the helices  $B^1$  and  $C^1$  to assist each other as soon as the point  $H^1$  comes in contact with the wire  $H$ , making the connexions between the batteries  $Z$  and  $Z^1$  as heretofore described.

$S$  is a coil-spring connected with the armature lever, and so adjusted as to draw back the armature lever against the points  $o^1 o^4$  with a force greater than the attraction of either electro-magnet, but less than the sum of their attractions.

*Claim.*—The mode described of dividing a long line of telegraph into two sections, and transmitting signals from either section to the other, viz: by means of two receiving electro-magnets at an intermediate station, the helices of which are interposed in the line of main wires, one after the other; said magnets acting in conjunction upon an armature lever, or its equivalent, which, by the motion produced by the attraction of the magnets, makes contact of a ground wire or wires with the main line between the two helices; and the said receiving electro-magnets and armature lever being combined with a spring, or other equivalent force, adjusted so as to draw back the armature lever with a force greater than the attraction of either electro-magnet, but less than the sum of their attractions, or any combination of apparatus operating in substantially the same manner.

No. 12,129.—CHAS. W. HAWKES and GEORGE P. REED.—*Improvement in Compensation-Balances for Time-keepers*.—Patented January 2, 1855. (Plates, p. 143.)

Set-screw *j* sets up against one side of brass arm *d*, and spring *l*, being attached to the other side of the arm with the outer end of it bearing against the ear *k*, will hold the brass arm firmly against the set-screw. This balance is adjusted by turning the set-screws *j j*, which increases or diminishes the leverage, thereby giving a greater or less throw to the weighted end of the lever. This balance exposed to heat will expand; the arms *b b* increasing in length and the rim in diameter, carrying the whole weight of the rim farther from the centre: but arms *d d*, being of brass, will expand less than the steel arms *b b*, carrying the short end of the lever, to which it is attached by pin *e*, out farther from the centre, and in proportion to the length of leverage will throw the weighted end of the lever in towards the centre, thereby counteracting the natural tendency of the whole weight of the balance to recede from the centre, by which a uniform motion is maintained through all the different changes of temperature.

*Claim*.—The compensating lever, or its equivalent, in combination with the radial arms *b* and *d*, substantially in the manner and for the purpose herein described.

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No. 13,977.—GEORGE BYINGTON.—*Improvement in Time-Indicators*.—Patented December 25, 1855. (Plates, p. 143.)

The nature of this improvement consists in the addition of the spring 3, whereby the instrument is made to work more easily than by the old construction. The rollers *r* being formed with grooves *g*, and the wire 3 being interwoven with them and sunk into said grooves, as represented in the figures, prevents the rollers being withdrawn from their places, while the pressure caused by the tendency of the spring to assume a straight form produces an amount of friction on the journals of the rollers sufficient to cause them to retain their position when moved.

*Claim*.—The wire or ribbon 3, arranged in the manner and for the purpose substantially as described.

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## IX.—CIVIL ENGINEERING.

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No. 12,145.—WM. E. WARD.—*Improvement in Sheet-iron Blinds*.—Patented January 2, 1855. (Plates, p. 144.)

The two edges of the side rails *a a* are bent semi-cylindrically, as shown in the fig. at *b b*, leaving a flat surface *c* between. The upper and lower rails *d d* are produced by bending a sheet of the form shown in fig. 3, midway, so that the half-tubes *e e* form a tube for the reception of the screw-bolts *l*, the flaring-ends *f f* resting on the cap-plates *q q*. The middle rail *g* is in a similar way obtained from a sheet of

the form represented in fig. 2; the tubes *h* receiving another pair of screw-bolts *l*. The distance of the flaring ends *f f* from each other, as well as the diagonal width *j j* of the square part of the middle rail, are to be equal to the width of the flat part *c* of the side rail, in order to effectually brace the whole in all directions. Small holes in the side rails receive the pivot-rods *m* of turning slats *n*. The open space in the outside face of the side rails is closed up by a strip of sheet-iron *s*, which can be provided with a rebate *t*. Hinges *p* are secured to the side rail.

*Claim.*—The manufacture of Venetian blinds of sheet-metal bent in the form and united in the manner substantially as herein specified.

No. 12,281.—CHAS. METTAM.—*Improvement in Rolling Iron Shutters.*—Patented January 23, 1855. (Plates, p. 144.)

The nature of this improvement will be plainly understood from an inspection of the engraving.

The inventor says: I do not claim as new, or irrespective of the relative position of the protruding arch, and the description of shutter to which the described form of slat refers, giving a slat a curved or arched form to increase strength; as a different disposition of the protruding arch and combination of curves have before been used in blinds, otherwise arranged than to roll up.

Nor yet do I claim, as new in itself, causing the edges of the slats in rolling-shutters to have a broad, flat bearing, or lap, the one over or upon the other, to exclude dust, &c.; as the ordinary flat-slat rolling-shutters possess that feature.

But I *claim* the rolling metal shutter, operating as described, making the slats of the form substantially as specified; that is to say, with an exterior protruding arch *a* at their centre, combined with flat laps or bearings *b* at their edges, the slats being arranged in relation to each other and united together essentially as set forth, by which configuration the shutter may be rolled up in a less compass, the labor of rolling up reduced, and the many other advantages set forth obtained.

No. 12,292.—HENRY BLAKELY.—*Improvement in Iron Window-Blinds.*—Patented January 23, 1855. (Plates, p. 144.)

These blinds can be made of very thin metal, as the pivots cannot be drawn out of their sockets by bending or trying to bend the blind.

*Claim.*—The described method of fastening the metal blinds or slats to the frame, by securing their ends, or the pivots on which they turn in the eyes, in such manner as will prevent the blinds from being taken out by any force applied to bend them short of the breaking strength of the several parts, the whole being constructed substantially in the manner and for the purposes set forth.

No. 12,695.—CHARLES ROSE.—*Improved Venetian Window-Blinds*.—  
Patented April 10, 1866. (Plates, p. 144.)

To the back of brackets are attached plates *a*, the slots of which plates catch hooks on plate *b*, which is fastened to the window casing, thereby supporting said brackets. An upper head B is arranged on these brackets; *c c* are hooks on the ends of cords which pass up and over pulleys in the upper head, and thence down to some convenient place of access. Hooks *c c* take into eyes *d d*, on the lower head A, and thus suspend the lower head A to the upper one. Hooks *m m* in the brackets catching into plates *n* on the lower head and held against them by springs *s*, support the lower head when drawn up. By pulling cord *p*, the hooks *m m* can be withdrawn, the lower head lowered by the hooks and cords *c c*, and removed after taking hooks *c c* out of the eyes. The upper head can then also be lifted from the brackets.

*Claim*.—In combination with the lower head and blind, the additional or upper head, and the hooks and cords for readily connecting or disconnecting the two heads for the purpose of placing or removing the blind from the window, substantially as described and represented.

No. 12,872.—GEORGE W. PHIPPS.—*Improvement in Window-Shutters*.—  
Patented May 16, 1866. (Plates, p. 145.)

The slats (see fig. 1) are bent on top and bottom in opposite directions, as seen at *a a*, for the purpose of sustaining each other. At the upper edge, and on the inside of each of the slats, is attached a ledge *b* for the purpose of catching and holding the upper edge of the slat below it, when being lifted in raising the shutter. The cord, being attached to the lower slat, lifts this slat first, and in its rising catches and takes up the next slat, and so on.

On the upper edge of the top slat is riveted a bar to support the same, and which is made to run in a separate groove over the other. When the shutter is down, this bar rests in its groove upon the top of the window-frame, and supports the weight of the shutter. On the bottom of the lower slat is another bar to rest on the sill of the window when down, to keep the shutter in its place.

In each of the sides of the frame there is placed a vertical bar, (see fig. 4,) which can be turned on pivots *s t* at its upper and lower ends, so as to press the shutter forward when closed against the front part of the groove and hold it in its place. The indenture *i* on its lower edge secures the bar on the lower slat, and holds down the shutter when closed.

The inventor says: I do not claim a lifting or sliding shutter made of slats or sheets; neither do I claim the peculiar shape of slats, as they have been before made in different shapes and forms, nor do I claim any particular mode of raising the same; but I do *claim* the peculiar form of the side grooves in the frame, tapering from the bottom to the top, increasing with the additional thickness given by the shutters in being lifted. (See fig. 3.)

Also, the supporting top bar and its grooves, and the vertical side bars, as described, and for the purposes described.

Also, the combination or arrangement of the upper bar, the vertical bars, and the slats, to produce the effect alleged, or any other substantially the same.

No. 13,140.—ALFRED A. STARR.—*Improved Adjuster of Window-Blinds.*  
—Patented June 26, 1855. (Plates, p. 145.)

The pressure of the bolt D against the side strip of the shutter-frame serves to retain the slats at any desired angle.

*Claim.*—The application of the spring friction-bolt to one of the slats of the shutter or blinds, in such a manner that it shall turn with the slat, and allow of the slat being adjusted to any angle, and at the same time bear with considerable force against the inside edge of the side strip of the frame of the shutter or blind, substantially as and for the purposes set forth.

No. 13,141.—LAFAYETTE STEVENS and SOLOMON B. ELLITHORP.—*Improvement in Window-Blinds, Doors, &c.*—Patented June 26, 1855. (Plates, p. 145.)

The tenons of the slats *a* pass through the fillets *b*, and are provided at their ends with a ferrule terminating in a fork *h*. Two rods *e e* serve to connect the fork ends, and the whole works in a groove *j* in the style A (which latter is not represented in figure 1). This blind can be opened and closed without having the usual rod in the centre: by merely turning one of the slats, they will all open and close.

*Claim.*—1st. The forked lever with the ferrule on the end, or the fork with a flat shaft at the end, made of either cast or wrought metal, for the purpose set forth.

2d. The application of the rods *e e*, made either of metal, wood, leather, or their equivalents, as described, and for the purpose set forth.

3d. The grooved style, with the fillet attached, for the purpose set forth and described.

No. 13,251.—WASHINGTON H. BIXLER.—*Improvement in Window-Blinds.*  
—Patented July 17, 1855. (Plates, p. 145.)

The spring *i* is wound up when the blind is drawn downwards, and it has not sufficient strength to draw the blind upward, because the cord *j* is on the large part of the fusee *h*, and on the small end of the fusee *f*; but the spring is allowed to be sufficiently strong to just balance the blind, so that by a slight touch the blind may be moved upward by spring *i*. As the blind moves upward the spring diminishes in strength, which, however, is compensated for by cord *j* gradually passing to the smaller end of *h* and to the larger end of *f*, so that when the blind is fully raised, the weight of the blind and the power of the spring will be equal.

The inventor says: I do not claim the employment of a single fusee applied to a blind or shade, for they have been previously used.

But I *claim* the attachment of two fusees *h*, connected by a cord *j a*, spring *i* being attached to the one fusee *h*, and the cords *c c* to the fusee *f*, as shown, and for the purpose set forth.

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No. 13,300.—FRANK CHASE.—*Improved Window-Blinds*.—Patented July 24, 1855. (Plates, p. 145.)

The sun is prevented from passing through these blinds, but light and air are freely admitted.

*Claim*.—Constructing blinds by nailing or securing oblique or diagonal slats to both sides of a frame, the slats on one side of the frame being opposite to or covering the spaces between the slats on the opposite side, as shown and described.

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No. 13,398.—CHAS. E. PARKER and JOS. SANGER.—*Improved Mode of Adjusting Blinds to Windows, &c.*—Patented August 7, 1855. (Plates, p. 145.)

The inventors say: We do not claim fitting blinds in grooves in the casing, and having a recess or box formed over the casing to receive the blind, for this is not new, iron doors and shutters having been previously so arranged; but we *claim* attaching the ropes or chains *e e, g*, to the two parts *C C* of the blind, so that a portion of the ropes or chains *e e* will pass on the outer side of the casing *A*, and within the apartment or house, and thereby allow the parts *C C* of the blind to be adjusted as desired, without raising or opening the sashes, as herein shown and described. (See engravings.)

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No. 13,500.—DAVID ROHAN.—*Improvement in Shutters or Blinds for Stores*.—Patented August 28, 1855. (Plates, p. 146.)

Figure 1 is a horizontal cross-section, showing the shutters as open; figure 2, a similar horizontal cross-section, the shutters being shut; figure 3, the sliding shutters *B B* in a perspective view, exhibiting the inner side of the shutters and their mitred joints and hinges *p g*.

I *claim* hinging the shutters together by mitred joints, so that when closed the joint or hinges may be concealed.

I also claim, in connexion with the mitred shutters *B C*, the hinged piece *G*, which serves the double purpose of a post against which said shutters abut, and to which they may be locked when the front is closed; and also as a finish to one of the shutters when it is run back as represented.

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No. 13,890.—DANIEL E. TRUE.—*Improved Blind-Fastener*.—Patented December 4, 1855. (Plates, p. 146.)

Supposing the blind to be closed, as shown in the figure, the two levers *D* will then be folded together, and a pin *i*, at the outer edge of

the sill, will be in the recess between the two flanches *e e* at the outer end of the spring-catch *b*. By moving the handle *F* in the direction of the arrow, the spring-catch will be withdrawn, and the parts will come into the positions indicated by dotted lines, when the blind will be open.

The inventor says: I disclaim the mere combination of bent levers for opening and closing the blind from the inside, as such device is well known, though requiring distinct adjustment for fastening and unfastening the blind.

I *claim* the arrangement of the spring-bolt at the extremity of the outer lever *D*, and constructing said lever with the blind, as described, so as to be self-fastening, and withdrawn by the said lever movement, operating the blind as and for the purpose described.

No. 13,980.—THOMAS DANFORTH.—*Improvement in Window-Shades*.—Patented December 25, 1855. (Plates, p. 146.)

As a window-screen is usually made of a rectangular frame covered with gauze, and without any means of being either expanded or contracted, it cannot be constructed of a length to correspond with the width of the window-frame between the bottoms or upright sides of its sash grooves; for were it so made, it could not be inserted conveniently in such grooves. It is always made somewhat shorter than said distance, and the edges of the screen can consequently not be in contact with the bottoms of the sash groove. To overcome this defect is the object of this improved expansive screen frame.

By rotating knob *G* the curtain-roller *F* will be rotated, and the curtain *E* will be drawn.

*Claim*.—Making the frame *A* so as to be capable of longitudinal contraction and expansion, as specified, in combination with applying the gauze shade or curtain thereto, and so as to wind upon a roller and be wound thereon, by devices substantially as stated.

No. 12,303.—J. J. W. ADAMS.—*Improved Implement for Boring Wells*.—Patented January 30, 1855. (Plates, p. 146.)

The inventor says: I do not claim the hollow auger *G*, for that has been previously used.

But I *claim* the employment or use of the spring *g* attached to the handle *f* of the swinging or suspended auger *G*, arranged substantially as shown, viz: with a knob or projection *h* on its outer surface, which knob or projection catches into a cavity in the under surface of the bail *F*, for the purpose of holding the auger in its proper position while being operated. (See engraving.)

No. 12,663.—JOHN ANDREWS.—*Improvement in Drills for Artesian Wells*.—Patented April 10, 1855. (Plates, p. 147.)

The cog-wheel *F*, and the weight *C* with which it is connected by means of arms *E*, rotate together with the drill. When the drill is



raised, the shaft K and the parts connected therewith remain stationary until the collar I strikes the pin *f*; at the same time the rising of collar I causes the shaft *m* and its pinion L to make a portion of a revolution each time the drill is raised. This is done by means of connection *o* *l p*, the operation of which is apparent from the illustration. Pinion L engages with wheel F; and thus this wheel, and with it the drill, are caused to rotate. The chain is composed of flat links with flaps *s*, so that it can only be bent around the windlass upon which it is to be wound, whilst it will be rigid in all other directions.

*Claim.*—The use of a stiff chain for the purpose of operating a rock-drill or other artesian borer, in the manner set forth.

2d. The device for rotating the drill, consisting essentially of the cog-wheel F and pinion L, with the parts which set them in motion, constructed and operating in the manner substantially as herein set forth.

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No. 12,688.—JOHN F. MANAHAN.—*Improved Machinery for Boring Wells.*—Patented April 10, 1855. (Plates, p. 147.)

Bevel gearing P O being set in motion, the pipe *z* C is revolved, as wheel O is fast on said pipe. (Wheel O is made in two parts, and these are connected by bolts *s*, which, when tightened, press the hub part of the wheel around pipe *z* C, thereby fastening the wheel on the pipe.) The upper end of the tube terminates in a stand H, which carries the gearing I J T. Cog-wheel T gears into a cog-wheel *u*, which is fast on cross-bar K. The pipe *z* C revolving, the cog-wheel T is revolved round the stationary cog-wheel *u*; and thereby the gearing I J is set in motion, and with it the chain-wheel F, which is on the shaft of bevel-wheel I. The chain being in motion, the buckets E raise the dust, dirt, etc., from the boring-cylinder B. A pin *m* fastens the tube C to a cross-head *b*, which is fast on cylinder B. By these means the cylinder B is made to revolve with pipe C; to the lower end of pipe C is attached a cross-head *l*, from the two outer ends of which pass two rods *j* downwards; to the ends of these rods *j* is secured the cutter *k*. This cutter has on its circumference a projection which catches into a recess in cylinder B, so that cylinder, cutter, and pipe will turn firmly together without any twist. The lower end of pipe C terminates in a bracket G, which carries the shaft of the lower chain-wheel F.

The cutter *a* in cylinder B swings on pin *x*, and is adjusted to cut a desired diameter by arm *g*, one end of which connects to cutter *a*, and the other to an arm shown in dotted lines in figure 3, which is firmly attached to the lower end of upright shaft *e*; the upper end of shaft *e* carries an arm *d*; a pin *c*, which is to enter through a hole on the end of arm *d* into one of the holes *i* in the cross-head *b*, serves to adjust cutter *a* to the required diameter of the well.

As the auger penetrates downwards additional lengths of well-tubes have to be inserted, which can be done after taking to pieces wheel O and removing it and the cross-bar K. The pipe C can also be removed, when desired, by taking out pin *m*.

The inventor says: I do not claim an endless leathern band, carrying

leathern buckets around two stationary revolving pulleys, as used in flouring mills, as such are well known.

But I *claim* as my invention the boring-cylinder B, having a cutter at its lower end and an adjustable cutter in its periphery for enlarging the hole, so that the auger cannot bind when in use, and so that the tube designed to line the well can follow the auger or cylinder B downwards, and allow this auger to be drawn up through the lining-tube by the shutting or moving of the enlarging cutter, all being arranged and operated in the manner and for the purposes set forth.

I also claim the metallic chain of buckets E in combination with the earth cutter B, operating or moving in such manner within it as to receive the earth as fast as it is cut from the ground and elevate it to the desired height, essentially in the manner and for the purposes set forth.

No. 12,706.—C. N. WHITE.—*Improved Implement for Boring the Earth.*—Patented April 10, 1855. (Plates, p. 147.)

Rod A passes through the hub D of the drill-holder C. On the end of rod A there is a weight B; rods *c*, being provided with eyes on their lower ends, are thereby fitted to staples *d* on said weight. The rods, passing through guides *c* on the weight, are held in an inclined position. The rod A and weight being forced downward, the drill F enters the earth. When the rod and weight are raised, two of the rods *c* strike against cross-bar G, (which is fast on the drill-holder C,) and thereby give the drill-holder and drill a turn; and as the rods *c* are allowed to move backward a certain distance in consequence of being connected to the staples by the eyes, they free themselves from rod G as the weight again descends.

*Claim.*—The combination of the frame C and weight B with the movable inclined rods *c* attached, the above parts being constructed, arranged, and operating in the manner and for the purpose as herein shown and described.

No. 12,523.—HENRY LAWRENCE.—*Improved Safety Ferry-Bridge.*—Patented March 14, 1855. (Plates, p. 147.)

A is the float hinged to the bridge in the usual manner; B the central, and C C are the side gates; D D are the weights and chains by which the central gate is suspended. The carriage G by the action of the weights D occupies the position shown in full lines in the engraving. When a boat comes up to the float, it moves the carriage in, thereby elevating the weights, lowering the central gate out of sight, (by means of bands K,) and throwing open side gates C (around pivot F by means of slotted arms J). The latter position is represented in dotted lines. Figure 1 represents only one half of a top view of the bridge, the other half being exactly alike.

*Claim.*—The employment of the reciprocating carriage G, the suspended central gate B, and the side gates C C; the whole being arranged essentially as shown, and operated by the boat and weights, substantially as and for the purposes set forth.

Also, making the side gates of a circular form instead of flat, so that in case drunken or thoughtless men lay hold of them, or get in a position to interfere with their being opened freely, they shall, as they open, have a tendency to throw them off, instead of forcing them up against the railings and crushing them, substantially as set forth.

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No. 12,952.—JOHN N. KING.—*Improvement in Swing-Bridges*.—Patented May 29, 1855. (Plates, p. 147.)

The bridge swings on a central vertical pivot on the abutment; a spiral spring is fastened with one end to said pivot, and with the other to the centre sleeper, as near the turn-table as possible, to make the bridge swing or automatize, with such other appliances as may seem necessary.

The inventor says: I do not claim a swing bridge poised on a centre abutment or pier, so as to revolve on an axis and leave a water-way on both sides of the pier, as that has been done before.

But I *claim* the combination and arrangement of the springs with the bridge, so that the opening and closing of the bridge shall become automatic, and shall not require the attendance of hands to open or close it, as is usual.

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No. 13,258.—JOHN K. GAMBLE and WILLIAM P. GAMBLE.—*Improvement in Safety Railroad Draw-Bridges*.—Patented July 17, 1855.—(Plates, p. 148.)

By turning crank *o* the cog-gearing will be set in operation, when the draw *G* (resting on friction rollers *n*) will commence to move horizontally and open gradually, elevating and passing under the connecting-bridge *H*. The teeth of rack *m* will take into cog-wheel *l* and turn the shaft *k*, and by means of the bands *i* also turn the shaft *c* and the two arms *b* and *d* upon said shaft *c*. The arm *d* will push back camf against spiral spring *g*, and withdraw bolt *F* from one of the two holes *s* *t* in the switch-bar *E*; the arm *b* will bear on the side of notch *a* in the switch-bar, and force the said bar aside so as to throw the switch-rail in connection with the branch-track *D*. As soon as this has taken place the arm *d* escapes camf, and the bolt is again forced by the spring into the other hole in the switch-bar, and made to lock the switch. When the cars arrive at a time the draw is open, they will run on the track *D* instead of passing into the river.

*Claim*.—The contrivances described, or their equivalents, so arranged and combined as to constitute a safety railroad draw-bridge, substantially as set forth.

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No. 13,461.—HORACE L. HERVEY and ROBERT E. OSBORN.—*Improvement in Bridges*.—Patented August 21, 1855. (Plates, p. 148.)

The bed-plates *B* are provided with rollers, on which the suspension-blocks *D* can traverse. The cable *E* supports the suspension

truss-frame by means of projections F on blocks G, which are fitted to move up and down upon posts O. The stringers J rest on sockets I projecting from posts O. The suspension-rods N are connected by nuts *g* with right and left handed screw-threads. K and L are the floor timbers. The abutment blocks D, being on rollers, move readily, and admit of the diminution of the camber of the upper chords S and W when the load is passing over the bridge. The chord E being an endless one, and always of the same length, the adjustment of the camber of the bridge is effected by making the blocks D traverse within the chord E, and the blocks *c* to traverse on the chords M, thereby allowing the chord E to become more or less arched, to adapt itself to the degree of camber given to the trussed arch.

By means of this arrangement the suspension cables support the suspension truss; and when the bridge is loaded, the weight tends to draw the suspension blocks towards each other, which tends to spring up the arch truss, and thus compels it to support the suspension truss and load. But if the load be placed on the arch truss or upper tier of floor-timbers, its tendency is to straighten the chords and stringers of the arch truss, and push the suspension-blocks apart and straighten the cables, and compel them and the suspension truss to support the arch truss. Thus if the load is applied in either place, the several parts of the bridge unite in sustaining and supporting it.

The engraving represents only one-half of the bridge, the other half being exactly alike.

*Claim.*—1st. The arrangement of the blocks D D and posts *o o*, in combination with the adjustable suspension truss, the arched truss, and the tension cord, so that the camber of the bridge may be increased or diminished by the adjustment of these blocks, in connection with the tension cord, so as to increase the strength of the bridge by lessening the strain on any one point by distributing it to many points, by means of the adjustable blocks, as described.

2d. Constructing and arranging the blocks which sustain the tension braces of the suspension truss, so that they will slide or traverse on the string-pieces, so as to equalize, distribute, and proportion the load more uniformly and over a larger portion of the bridge.

3d. Supporting the floor-timbers alternately by, or successively by, the arch and suspension trusses, as set forth.

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No. 12,161.—EMANUEL HARMON.—*Improvement in Fire-proof Iron Buildings.*—Patented January 2, 1855. (Plates, p. 148.)

*a a* is the skeleton iron wall, and *b* the exterior covering. The wall *a* is wholly enclosed in plaster-of-paris *c c*, or other non-conductor; the external plates *b* being attached in such a manner as to admit between the wires attaching said plates to the wall of a piece of felt *d*, a non-conductor. To hold the plates firmly, without resting upon the plaster-of-paris, small pieces of soapstone *e e*, non-conductors, are imbedded in the plaster-of-paris, and interposed between the outer plates and the skeleton-frame. Thus the skeleton-frame is protected from the effects of solar heat, cold, and from fire.

*Claim.*—The inventor says: I do not claim the use of an air-space or of a non-conducting substance for the purpose of intercepting the communication of heat between two metallic surfaces, or the surfaces of the walls of an iron building.

But I do *claim* the insulation of the skeleton frame-work of iron buildings from the exterior and interior coverings of said frame-work, with their fastenings or attachments, by the interposition of a non-conducting substance, such as plaster-of-paris, soapstone, or felt, in combination with an air-space, or sheets of plaster-of-paris, felt, or other incombustible non-conducting substance, in the manner and for the purpose set forth.

In the second place, I claim the above insulation in combination with the entire filling up of the space between the said exterior and interior coverings or surfaces with any incombustible non-conducting substance, in the manner and for the purposes set forth.

No. 13,379.—D. D. BADGER.—*Improvement in Iron Houses.*—Patented August 7, 1855. (Plates, p. 148.)

*Claim.*—The method described of securing the bases of the columns to the breast-summors or lintels by bolting each on the inner side to a broad flanch *c*, and keying it on the outer side by a key *d*, whereby they are properly secured against any movement back or forth on the breast-summors or lintels, or against falling outwards; but are not prevented from falling inwards when they become insecure.

No. 12,633.—GEO. MARTZ.—*Improved Apparatus for Hoisting and Dumping Coal-Cars.*—Patented April 3, 1855. (Plates, p. 148.)

When the carriage B, with the coal-car C, has been lifted to the proper height for unloading, the guide-rollers M will follow the curved portion P of their track A<sup>2</sup> N, and thereby the car will be brought into the position represented in dotted lines.

*Claim.*—The combination of the coal-car C and its carriage B with the hoisting-carriage D, in such manner that whilst the hoisting-carriage D is guided vertically up the shaft by its ways A<sup>1</sup>, the carriage of the coal-car C is guided by the independent ways A<sup>2</sup> and N, in such a manner as to tilt the car when it obtains the proper elevation, and place it in such a position that its contents will be self-discharged into the chute O, substantially as set forth.

No. 12,642.—FREDERICK A. PETERSON.—*Fire-proof Floor-Ceiling.*—Patented April 3, 1855. (Plates, p. 148.)

*i* are iron beams, supported in the usual manner by having their ends inserted in and resting on the walls. The tile-tubes *k*, with the bottom flat and the top arched, rest with the sides on the lower flanches of the beams, so that the tile-tubes, being supported by the iron beams with-

out lateral thrust, afford a substantial support for concrete filling above to form a level surface for the floor.

The inventor says: I do not wish to be understood as limiting myself to the special form of the beams and tubes, and the kind of filling between them, so long as the same result is attained by merely formal variations.

I *claim* the method, substantially as described, of making fire-proof floors and ceilings by means of metallic flanged beams, in combination with tile-tubes interposed between and resting on the flanges of the beams, and filled in above, all substantially as and for the purpose specified.

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No. 12,131.—JAMES B. HARRIS.—*Improvement in Railroad-Chair Machines*.—Patented January 2, 1866. (Plates, p. 149.)

The table or rest consists of two separate leaves  $b\ c$ , having between them an interval sufficient to receive the heads of the shearing and bending jaws. These leaves occupy a square space corresponding to that of the plate of which the chair is to be made. The leaves are united together by a rib  $o$ , which rib is pierced by two adjusting slots  $a^3\ b^3$ , in order to admit of a vertical elevation of the table to suit the wear or the condition of the faces of the two crank-cutters. This arrangement maintains the centres of curvature of the chair-clips in coincidence with the centres of motion of the crank-cutters; by the vertical motion the shearing power is maintained, so that a clean cut and the curvature of the clip, without tearing or straining it, are to be effected, though the metal prove, as usual with rolled metal, to be of various shades of thickness and toughness.

Plate  $d^3$ , with screws  $f^3\ e^3$  fitting into slots  $a^3\ b^3$  and into holes  $h^3\ g^3$  of plate  $c^3$ , serves to fix table  $b\ c$  in the proper position.

$k\ k^1$  are crank-arms fixed to the front ends of shafts  $l\ l^1$ , and of sufficient length to permit the vibration of the wrists  $m$  clear of the edges of leaf  $c$ . From the wrists project the inverted jaws  $n$ , terminating each of them in a die  $N$ , whose two transverse edges  $M\ M$  stand when the crank is in its lowest position flush with the upper surface of the rest. These edges are left slightly salient by hollowing the face between them. This hollowed face is to counteract the tendency of the chair-plate to bend before the said face, so as to impart to the inner side of the clip a bellying form; and when the jaw is brought so as to press the clip tightly between the jaw-face and the mandrel, these salient edges of the face bring the margins of the clip flush with the middle, and thus are to enable the clip, when in use, to bear across its entire width upon the base of the rail.

*Claim*.—1st. The holding-plate  $e^3$  (fig. 2) and the leaf  $o$ , with the slots  $a^3\ b^3$ , (fig. 3,) and the block  $d^3$  with the screw  $f^3\ e^3$ , in combination with the crank-cutters  $N$ , the whole being arranged as described, and for the purpose described.

2d. The cutter with salient cutting edges, thus making the cut (see  $N$ , figs. 5, 6, and 7) concave in its length, substantially in the manner and for the purpose described.

No. 13,313.—JAMES KELREN, assignor to HIMSELF and GEORGE BANES.  
—*Improvement in Machines for making Railway Chairs*.—Patented  
July 24, 1855. (Plates, p. 149.)

Each of the bending dies *F* carries one or more punches *U U*, for punching the holes in the chair through which the spikes are to be passed. Each of the punches slides vertically through the die, and when in its highest position is supported on a helical spring *k*. Above each of the punches is a driver or depresser *V*, which is fastened to the cross-head *K*, which latter is vertically reciprocated by means of a crank and pitman *L*, and carries upon an arm *m*, extended from it, a horizontal lever or lifter *W*. The longer arm of *W* is borne towards a stationary cam *X*, by means of spring *n*. The cam allows the lifter to pass under the head *l* of its punch, while the punch is being driven downwards, and enables it (the lifter) to elevate the punch out of the chair during a part of the ascent of the lifter. The cam also discharges the lifter from the hold on the punch after the latter has been sufficiently elevated. The object of the springs *k* is not to elevate the punches, but to maintain them elevated during the movement with the dies. As a spring could not be depended upon, the above described lifting contrivance is here employed.

The inventor says: I do not claim the combination of bending dies, a bed, and former.

But I *claim* combining with each of the punches and its driver a lifter, and mechanism for operating such lifter, as specified, such punch being applied to the bending die, and supported on a spring, as explained.

No. 12,623.—SAMUEL W. FROST.—*Improved Safety Port for Coal Holes*.—Patented April 3, 1855. (Plates, p. 149.)

The safety guard is composed of two quadrantal arcs *C C*, which project from the under side of the cover *B*, and extend into the opening of the vault-frame *A*. A cross-bar *D*, which is arranged near the lower corner of the arcs, prevents a person's foot from slipping into the coal vault. *C C* serve as guards when a person approaches the coal vault from either side, and the rear side is protected by the cover *B*. Pin *E* serves to fasten the cover when open.

*Claim*.—Combining with the door *B* and the frame *A*, or the vault opening, a safety guard applied thereto, substantially in the manner and for the purpose specified.

No. 12,637.—F. H. MOORE.—*Improvement in Coal-Hole Covers*.—Patented April 3, 1855. (Plates, p. 149.)

The rods *b* are pierced with several holes, and can be secured at various heights by passing pin *a* through one of the ribs *B* on cylinder *C*, and through one of the holes in the rod *b*.

*Claim*.—The method of securing the coal-hole cover by means of the rods *b*, or their equivalents, whereby the cover may be raised more

or less, as required, for purposes of ventilation, or for the introduction of coal; and all danger to passers-by is avoided, as set forth.

No. 12,388.—ALONZO HITCHCOCK.—*Improvement in Weather-Strips for Doors*.—Patented February 13, 1855. (Plates, p. 149.)

Fig. 1 represents a vertical, and fig. 2 a horizontal section through the door D. To the apex *a* of the V-shaped groove *s a s'* in the lower edge of the door is hinged a weather-strip W, the inner end of which rests against the elevated surface E, and remains in contact with it during the opening or closing of the door. When the door is closed, the lower edge of the weather-strip is in contact with door-sill C; but when the door is being opened, the weather-strip following the line *y* of the surface E will sufficiently rise to clear the door-sill. The door being closed, the rain-water running down the outside of the door will suddenly break off at the edge *s*, and run down the inclination of the sill. The weather-strip makes it still more secure against wind and rain.

The inventor says: I do not claim the V-shaped groove, nor the hinged weather-strip, nor the listing, as described, as they have been used before.

But I *claim* the peculiar form of the elevated surface or plane E, in combination with the V-shaped groove, weather-strip, and listing, substantially as set forth.

No. 13,090.—ORRIS C. HILL.—*Improvement in Doors*.—Patented June 19, 1855. (Plates, p. 149.)

*c* is a strip which, (pressed outwards by springs in the groove into which the strip is inserted,) when the door is closed, fits tight against the bevel *d* of the casing.

*Claim*.—Inserting springs and strips *c* into grooves in the bevelled top, bottom, or outer edge of a door, when the said door is made to fit into a casing, which is correspondingly bevelled *d*, by which the joints of the door are made wind and water proof, substantially as set forth.

No. 13,121.—MARTIN CROKE.—*Improvement in Weather-Strips for Doors*.—Patented June 26, 1855. (Plates, p. 149.)

The nature and object of this improvement will be understood from the claim and engraving.

*Claim*.—Placing or securing a strip or strips *g*, of India-rubber, within a bar C, which bar is fitted within a recess *b* in the lower end or edge of the door B, the bar C being rendered adjustable by the set-screws *d*, substantially as shown and for the purpose set forth.



No. 13,279.—WM. E. WORTHEN.—*Improvement in Metallic Blinds for Doors and Windows*.—Patented July 17, 1855. (Plates, p. 150.)

The slats consist of tubes *a* filled with some non-conducting material *b*, and have pivots *f* passing through and sliding in slots *e* in the interior side-pieces *c*. The vibrating chains *h* are each attached to one end of arms *g*; the lifting cords *i* are attached to the lower slat; a chain *k* connects the ends of plates *b*<sup>1</sup>, secured to the pivots *f*, which serves to support the slats and lessens the strain upon the vibrating chain; the locking bar *s* is pivoted to the ends of two small levers *t t*. This bar can be moved close to the slat-arms (see fig. 1) bearing against the flat side of each. When held in this position by means of a catch, the slats will be effectually prevented from being turned or opened from the outside.

The inventor says: I state, that certain parts of my invention may be usefully applied out of the connection shown; and I also wish to be distinctly understood that I do not claim as of my invention a blind made up of slats capable both of rising and falling, and of vibrating, except when combined with pivots, &c., as set forth; and also that I lay no claims to raising and vibrating cords or chains, except when attached and located as claimed.

But I *claim*: 1st. A tubular metallic window-blind slat, containing in the cavity thereof a non-conductor of heat, constructed and applied substantially as specified.

2d. I claim pivots and grooves, or their equivalents, applied substantially as set forth, in combination with metallic slats, capable of vibration and of rising and falling, by which a firm secure shutter is constituted, while the ordinary uses of inside Venetian blinds are still retained.

3d. I claim a locking-bar, substantially such as specified, in combination with slats capable of vibration and motion, in a plane vertical, or nearly so.

4th. I claim arranging arms to which are attached vibrating chains; and also vibrating chains, as set forth, in a recess separated from the slats proper, substantially as set forth.

And, lastly, I claim a supporting chain, as described, in combination with slats capable of vibration and motion in the manner and for the purposes substantially as specified.

No. 12,201.—DEAN S. HOWARD.—*Improvement in Dredging Machines*.—Patented January 9, 1855. (Plates, pp. 150 and 151.)

Fig. 1 of the engravings represents a side view of the boat, with three different positions of the dredging apparatus, one being represented in full and the other two in dotted lines; fig. 2 exhibits a plan of the boat and machinery, representing only about one-half of it, the other half being exactly similar; fig. 3 represents the cam or chain-wheel; fig. 4, the car; and figs. 5 are side, front, and bottom views of one of the buckets.

The nature of the various improvements can plainly be understood from the claims; a more detailed description would occupy too much space.

*Claim*.—1st. Constructing the bucket *h* with a truss-bar *q* across its

bottom, which, in addition to stiffening the bottom of the bucket, serves as a guide to the latch *s*, and a fastening to the spring *t*.

2d. Fastening or attaching the latch to the bucket by a lip on the rear end of the latch entering an aperture of corresponding size in the bottom of the bucket, the latch being held in its place by a spring bearing on it at any point between the lip, which forms its hinge or fulcrum, and the catch.

3d. Fastening the buckets to the chains by a bolt passing through the links of the chain between the joints and through the ears *D* and hinges of the doors of the buckets at the upper end, and at the lower end by links or clay cutters *p*, as the case may require, one end of which is fastened to the buckets, one on either side, the other end being secured to the chain *g* by a bolt passing through the links between the joints thereof; whereby the chains are allowed to conform to the curve of the wheel *C*, whilst the buckets are suspended between them, without conforming to that curve, and whereby the buckets may be readily disengaged from the chains, when out of order, and replaced with others.

4th. Also the side or clay cutters, as and for the purposes herein described.

5th. The manner of raising the buckets and chains into their rest position for transportation from place to place, by the combination of the pulley-purchase 24 with the wheel 19 and axle 20, when attached to a car 17 that carries the upper flange-wheels *E*, over which the bucket-chains *g* work, operated as herein described.

6th. The self-acting pawl 27 and catch 25, in combination as described; by which the pinion 22 is thrown out of gear, when the machinery from any cause is turned back.

7th. The manner herein described of feeding by the feeding-ways *l*.

8th. The manner of feeding or winding the vessel ahead by an eccentric 8 on the main or any other revolving shaft, operating the levers 9 11 and pawls 14, in combination with the windlass 7. Also the combination of the pawl 14 with the vibrating arms 15, as herein described, whether in connexion with the other parts of this feed apparatus or not.

9th. The construction and arrangement of the anchors 31 and 32, as herein described, in combination with the winding-head 40 on the counter-shaft *f*, whereby the vessel may be worked ahead, whether the elevating machinery is in operation or not, or during the time that the feeding-ways *l* are being drawn back preparatory to taking a fresh cut.

10th. The manner herein described of constructing the cam or chain-wheels *C e e*, the face plates *n* on the periphery of the wheel being of steel, and the cams *m* removable, so that they may be turned or removed at pleasure.

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No. 12,720.—CHAS. H. FONDE.—*Improvement in Dredging-Machines*.—Patented April 17, 1855. (Plates, p. 151.)

The radius-bar *A*, which carries the pinion-shaft *C*, is connected with and works upon the main shaft *D*. When the excavating-wheel is raised, the radius-bar will draw the sliding-carriage *B* (on which the

pinion-shaft C is mounted) upon the slides E, thus always keeping the pinion in gear with the cogged circumference of the wheel. The operation of the latch F and sluice-ways G G is apparent from the figures.

The inventor says: I do not here claim the excavating-wheel, with buckets across the periphery, nor the tilting-tipper for discharging the same, nor the manner of applying power to the same, nor the raising and lowering of said wheel; but what I *claim* is: the device for keeping the wheel in gear while raising and lowering, and the combination of the radius-bar and the sliding-carriage which carries the shafts of the pinions, and also moves the mitre-wheels which slide on the feathered shafts; as this device and this combination of well-known mechanical devices is my own invention, and has enabled me to keep the excavating-wheel always in gear with the engine, and has never been so applied before. I claim, as my invention, the self-acting latch F, in its particular form and mode of adjustment, it being so shaped and adjusted as to hold on to the lid of the bucket until it is struck by the tipper, and so balanced that by its own gravity it will fall over and latch again before the bucket enters the water; this particular form and adjustment, with the pin marked H, does away with the necessity of springs, and is the result of careful and expensive experiments. I also claim that particular combination of chutes, or sluice-ways G G, which form an apex under the discharging-tipper, and pass athwartships on an incline towards the scows, which particular combination has enabled me to discharge an excavating-wheel laterally on either or both sides.

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No. 12,527.—GEORGE W. WHEATLY.—*Improvement in Eaves-Gutters of Houses*.—Patented March 13, 1855. (Plates, p. 151.)

The sheets of metal A are fastened together, and one edge is turned up until the upright part B will be perpendicular when placed upon the roof. The upper edge of B is then formed into a moulding C, and the strops D are soldered to it; the strops being of sufficient length to extend to the sheeting above the gutter, to which it is nailed.

I *claim* the application of a bead or moulding, together with the strops, to gutters of the description above, giving strength to the gutter without the aid of a plank or other substance.

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No. 12,514.—ROBERT C. MAUCK.—*Improved Ditching-Machine*.—Patented March 13, 1855. (Plates, p. 151.)

By turning the shaft *k* the swinging-frame F will be moved further out or in, (by the action of cog-wheel *h* and toothed segment *g*.) so that the frame E will be more or less inclined, raising the heels *f* of the cheeks *e* from the ground, and causing the edge *n* of the cutter B (which is confined between the said cheek-plates *e*) to rest on the ground. Thus the movement of the frame F regulates the inclination of the cutter, which latter is to be suited to the nature of the soil.

*Claim*.—The described mode of regulating the operation of the cutter or plough by means of the swinging frame F, connected with the

body of the machine, substantially as specified, in connexion with the cheek-plates, operating as and for the purposes set forth.

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No. 12,651.—C. WILLIAMS.—*Improved Excavating-Machine*.—Patented April 3, 1855. (Plates, p. 151.)

*Claim*.—Having the frame or shaft D of the scoop or shovel E formed of two bars *e e*, and having said bars working between friction rollers *d*, in guide-plates *c c*, at opposite sides of the pole A. The frame, or shaft, and shovel being operated by the means shown, or their equivalents.

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No. 12,919.—JASON C. OSGOOD.—*Improvement in Submarine Excavating-Machines*.—Patented May 22, 1855. (Plates, p. 152.)

This improvement consists, first, in combining with submarine excavating-machinery C well-hole deposits B, which are built within the vessel supporting the excavating-machinery; and also railway tracks *c c*, upon which run dumping cars *d* for the purpose of conveying the earth from the excavators D to the well-hole deposits, for the purpose of enabling the dredging-boat (furnished with a screw or paddle-wheel propeller) to be self-tending, and to dispense with the mud-boat tenders.

Secondly, in combining with the dredge-boat submarine drags J, said drags being permanently affixed by hook and eye, or swivel-joint, at one end to the side of the boat, and at the drag-end having a hoisting apparatus connected to it for the purpose of hoisting the drag-end quickly up to the boat when necessary to suspend temporarily the use of the drag. When the well-holes are filled, the cables are slipped and the boat runs out into deep water, and (by opening the well-hole doors *a*) drops its load.

The inventor says: I wish to be understood not to claim as new the excavating-machinery, the well-hole deposits, the railway track, and dumping-cars, or the drags, when taken separately.

But I do *claim*, 1st. The combination of the excavating-machinery, the railway track and car, and the well-hole deposits of the float or vessel, when combined in the manner substantially and for the purposes of a self-tending submarine excavating-boat, as herein described and set forth.

2d. The combination of the drags with the vessel or float constructed as herein described, said combination being substantially in the manner and for the purposes as herein set forth.

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No. 13,234.—SAMUEL W. SOULE.—*Improvement in Excavators*.—Patented July 10, 1855. (Plates, p. 152.)

The stationary pins *c* on the cart-box E serve to guide the bucket-frame F, by means of its slots *b*, into the various positions necessary for loading and unloading the buckets G G, which positions are represented in the engraving, one in full and the other three in dotted lines.

*Claim.*—The frame F placed on the crank D of the axle or shaft C, said frame being furnished with buckets G G, one at each end, and enclosed by a box E provided with transverse pins or rods c, substantially as shown for the purposes set forth.

No. 13,282.—EDWIN WILLIAMS.—*Improvement in Excavating Machines.*—Patented July 17, 1855. (Plates, p. 152.)

The boom i is held to its pinion k, by means of a stirrup n. The operation of this machine will be understood from the claim and engraving.

The inventor says: I do not claim simply an excavating shovel having an extended handle capable of longitudinal and vibratory motion, such having been heretofore employed.

But I *claim* an excavating shovel or scoop, provided with one or more cables, as described, or their equivalents, and having its rear portion or handle hinged to one extremity of a boom, which has longitudinal and vibratory motion about an elevated pinion, or its equivalent, the unattached extremity of said boom being made to counterbalance the scoop, in the acts of dumping, &c., as explained.

No. 13,680.—BENJ. HANCOCK.—*Improvement in Excavators.*—Patented October 16, 1855. (Plates, p. 152.)

The rear support e of the frame, to which the scoop m is attached, is made adjustable by means of bolts z z and slot i, as will be understood from the engraving. The shaft o of the scoop is pivoted at n to the slotted suspension-rod q. Lever r is pivoted to shaft o, its forward end being bent into a segment of a circle, the centre of which is at p; the rear end being held up by spring s, and the segment being toothed to engage on pin t. Handle n is also pivoted at p, and carries a sliding rim u to hold shaft o down to handle n, when in use.

*Claim.*—1st. The dumping scoop, constructed, arranged, and operated substantially as described, and for the purpose specified.

2d. In combination with the above, the movable and adjustable frame, as described, for the purposes set forth.

• No. 12,921.—J. B. REYMAN.—*Improvement in Fences.*—Patented May 22, 1855. (Plates, p. 152.)

A is one of the posts supporting the wire s, which passes through holes in said posts; D D are slender strips of wood forming the upper rail, one of them immediately above and the other immediately below the wire. The pickets are fastened to the upper rail, from side to side alternately, by the wire s passing over each, and from side to side of the rail. The lower ends of the pickets are fastened to the lower rail Y.

To move the protruding braces and sills K M to permit a plough to pass close to the fence, the fence is to be lifted sufficiently to disengage

the foot of standard H from the notch in the sill, which allows the brace to be closed flat against the surface of the standard, the sill at the same time passing to the other side of the fence.

*Claim.*—The mode of fastening pickets to the rails, in making fences, by means of wire *s* combined and interwoven with the rails in the manner substantially as described. Also, fastening the brace K at its upper end to the standard H, so as to admit of a hinge-motion, in the manner and for the purpose substantially as set forth.

No. 13,844.—H. H. DENNIS.—*Improvement in Fences*.—Patented November 27, 1855. (Plates, p. 153.)

This improvement consists in connecting the rails B with the posts A by obliquely grooving the under face of the rail near its end at *g*, so as to fit upon a convex bottomed mortise in the post, (see *e e*.) and be secured therein with any desired inclination to the post by a wedge *w* between the upper surface of the rail and the top *d* of the mortise, also convex. P are the palings.

Figure 1 represents a section on a larger scale than the rest of the figures.

*Claim.*—The described mode of connecting the rail and post by mortise with convex top and bottom and groove *g*, constructed, arranged, and operating substantially as and for the purpose specified.

No. 12,701.—JOHN SWEENEY and THOMAS SWEENEY.—*Improvement in Adjustable Friction-Rollers*.—Patented April 10, 1855. (Plates, p. 153.)

A stationary cylindrical box *b* is closed by two circular plates *c c*, which have suitable central openings for the journal *i* to pass through. Within said box there are two circular plates *d d* with similar central openings. Plates *d d* are firmly connected together by pins *e*. The journals of the friction-rollers *g* run in boxes *f*, which slide in ways *k* on plates *d*, and are continually pressed towards the journal *i* by springs *k*. The inner circumference of box *b* touches the circumferences of the rollers *g*. The journal *i* being revolved, the rollers *g* will revolve round their axes; and as they are in contact with the inside of box *b*, they (together with their plates *d d*) will at the same time slowly revolve within said box around journal *i*, instead of rubbing against the box. Lest there should be friction between the outer face of plate *d* and the inner face of plate *c*, there are flanges *o o* within the upper half of the box preventing plates *d* from approaching plates *c*.

*Claim.*—The use of sliding boxes to carry the journals of the friction-rollers, in combination with the springs for the purpose of pressing them all continually against the surface of the journal or gudgeon of the shaft which works in the rollers, so as to make them all revolve as the journal revolves, not only on their own axes, but around the journal, in the manner herein before described.

No. 12,652.—ENOS WOODRUFF.—*Mechanism by which approaching Vehicles Open and Close Gates.*—Patented April 3, 1855. (Plates, p. 153.)

The weights E are wound up by turning the gate round backwards. The gate is held shut by the latches F and the catch G; a similar catch upon each post H holds the gate when open. These catches, as shown in figure 2, are double, having one side X higher than the other, to stop the gate when closing, and at the same time to allow the latch to pass over freely when the gate is turned backward to wind it up. The two latches are caused to lift simultaneously by the cross-ties I. The pressure of a wheel upon crank-levers M L moves lever K around its fulcrum, thereby causing the upright rod o to lift latch F out of catch G, the weights causing the gate to rotate till stopped and held open by the catches on posts H. The wheel passing over crank-lever S lifts the latches and allows the weights to close the gate. (The crank-levers M L are too far apart to be moved simultaneously by the tread of an animal, but they are near enough to allow a carriage-wheel to press upon both of them at the same time; the motion of M pushes rod N, thereby withdrawing block P from under the end of crank-lever L, which can then be depressed by the wheel.)

I claim, 1st. Applying weights in the manner specified, or any similar manner, to operating the gate.

2d. The application to such gates of the manner herein described of causing both latches to lift at the same time.

3d. The application of catches, with one side higher than the other, to a rotating gate.

4th. The manner above described of preventing the tread of an animal from opening the gate, or any mode analogous thereto.

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No. 12,790.—CORNELIUS L. HARKEN and MOSES R. BRAILEY.—*Farm-Gates.*—Patented May 1, 1855. (Plates, p. 153.)

The planks and stiles are riveted together, so as to allow a free vertical movement to the stile *a*. Attached to the stile *a* is the bent lever L, which is connected to the upper part of stile *a*<sup>1</sup> by a rod R, rendering the distance between the two points of attachment invariable, and converting the lever L into a lever of the first order, with its fulcrum at *i*. When the lever is moved in the direction of the arrow the stile *a* will be raised, lifting the catch *k* from its notch; and the elevation of the gate admits of its passing over snow-drifts and other obstructions.

*Claim.*—The construction of farm-gates with their several parts loosely connected, combined with the bent lever L and diagonal rod R, arranged and operating so as to elevate the gate in opening for the passage of obstructions, substantially as herein set forth.

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No. 12,914.—HENRY B. LUM.—*Improvement in Farm-Gates.*—Patented May 22, 1855. (Plates, p. 153.)

This gate can be opened and closed by a person in a carriage or on

horseback. The operation of this gate will easily be understood from the claim and engravings.

*Claim.*—Having the lower ends of the gate A secured by pivots or rods *c c* to a sill-piece C, and having a series of strips *d* placed on sleepers or secured in any proper manner on the ground at one side of the gate, spaces being left between said strips to allow the bars or rods *b* to pass therein; the gate having a weight or counterpoise E, one or more, attached to it by a cord or chain *f*, which passes over a pulley *e* attached to the post D, one or two posts being employed; the gate being operated by the levers G G, with the cords or chains *g g h* attached thereto. The above parts being arranged substantially as herein shown and for the purpose as set forth.

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No. 12,930.—CALEB WINEGAR.—*Method of Closing and Opening Gates, &c.*—Patented May 22, 1855. (Plates, p. 153.)

The crank V (revolved by weight rope and gearing H I K N) is of sufficient length to open the gate during one half and shut it during the other half of one revolution. The gate, which is represented half open in the figure, has a latch D, which falls in catches C of C<sup>1</sup> when closed or open. The pulling of cord Q or Y will release the latch from the catch by means of the elbows and rods F S E, and the gate will then be opened or closed by the action of the weight, crank, and pitman P.

*Claim.*—The opening and shutting of gates or doors by the means before described; that is, by means of a retentive or reserved power, so that a gate or door may be opened or closed a succession of times, let it be obtained by winding up a spring or weight, or whether gear is used, or cord and pulleys.

Also the application of the wires and the said right angular irons or elbows to the opening and of shutting gates, &c., in the manner before described; not intending, in these claims, to limit to the precise arrangement of parts herein described, but to vary the same at pleasure, while the same ends are attained by means substantially the same.

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No. 13,109.—WILLIAM THOMPSON.—*Self-operating Circular Gate.*—Patented June 19, 1855. (Plates, p. 153.)

The inventor says: I am aware that many modifications of the described gates may be made; I therefore do not confine myself to the precise form shown.

I *claim* constructing the gate B of circular form, and having said gate rest upon a vibrating rail C, which is connected to a platform D, or arranged in any proper way, so that said rail may be inclined either by the weight of the person, vehicle, or animal, which is to pass through it, or by any other device, and cause the gate to roll down the depressed end of the rail, and consequently leave a free or open space between the posts, said gate closing or returning to its original position between the posts, when the rail is relieved of the weight or pressure which first actuated it.



No. 13,445.—CALEB WINEGAR.—*Improved Device for Opening and Closing Gates*.—Patented August 14, 1855. (Plates, p. 154.)

A cog-wheel N is placed upon shaft *y*, in the place of the driving-crank in the original patented machine referred to in the following claim. Pinion U on shaft 2 meshes into cog-wheel N. The fan T turns loosely on the shaft 2, and is driven by ratchet-wheel V, which is fast on the shaft; the spring catch W plays into V, and thus the fan is driven; so that when the gate stops suddenly, the fan runs on with its own momentum and does not add to the jar or shock.

The inventor says: I *claim* the fan-wheel T, and shaft 2, and cog-wheel N, the ratchet-wheel V, and spring catch W, as applied to said invention.

All else I disclaim in this patent as having been patented to me in said original machine, (date of patent, May 29, 1855,) and held by me under said patent; not intending in these claims to limit myself to the precise arrangements of the parts described, but to vary the same at pleasure, while I attain the same ends by means substantially the same.

No. 13,658.—SMITH A. SKINNER.—*Improved Farm Gate*.—Patented October 9, 1855. (Plates, p. 154.)

The latch-bar L slides horizontally between two scrolls *g* and *h*. *h* moves the latch-bar towards pulley *c*, and *g* elevates the latch-bar during such movement, in order that the latch-bar may be brought directly into the path of cam-notch M, when the gate is raised to its highest position, or the gate is closed, so as to maintain the gate in its elevated position. The gate can be lowered and then elevated by pulling first the one and then the other of the cords G H.

The inventor says: I do not claim elevating a gate by means of a windlass and draft and connecting-chains; nor making the gate to close into a recess below its sill; nor balancing a gate by means of counter-balance weights, cords, and pulleys.

I *claim* the manner of making the gate, viz: of a series of bars or chains D D, and upright chains connected and arranged as specified, and so as to fold into and unfold out of a recess *a* below the sill A, as explained.

I also claim the combination and the arrangement of the latch-bar L and the scrolls *g h*, the same being constructed and applied to the windlass, and made to operate substantially as specified.

No. 13,673.—JOHN K. WEBER.—*Improved Method of Operating Farm Gates*.—Patented October 9, 1855. (Plates, p. 154.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—The arrangement of the levers *a a'* *b b'*, cords *a<sup>2</sup> a<sup>3</sup> b<sup>2</sup> b<sup>3</sup>*, in combination with the spring bolt, for opening and closing a gate, which

opens and shuts both ways, the whole operated and operating substantially in the manner set forth.

No. 13,624.—HENRY SIZER and ELISHA STONE.—*Apparatus for Opening and Closing Hatchways*.—Patented October 2, 1855. (Plates, p. 154.)

Supposing the scuttle-doors L to be closed, and the hook and rope drawn up near to cylinder B, the rope F is to be pulled downwards, which will also carry the rack and chain downwards, so that the teeth of said rack K come in contact with the teeth of the gears M N, which turns them, and consequently the segment M by which the doors are opened; the rope and hook (attached to cylinder B) are farther lowered by pulling rope F farther downwards, so as to attach it to the load, which can then be raised by pulling rope F the opposite way.

*Claim*.—1st. The chain-wheel H, the chain I, the rack K, the doors L, with segments of gears M or whole gears attached to them, and the gears N, or the equivalent of any of these, for the purpose of opening and closing hatchways or scuttle-doors, essentially as set forth.

2d. The parts mentioned, either or all of them, in combination with the cylinder B, the rope-wheel E, and the gears C and D, for the purpose of opening and closing the doors of scuttles and hatchways, essentially as set forth.

No. 12,136.—JEAN FRANCOIS LE MOULNIER.—*Improvement in Constructing Pavements, &c.*—Patented January 2, 1855. (Plates, p. 154.)

The object of this improvement is to pave with blocks of stone fitted to and interlocking each other, so that the joints shall be close; all this without the labor of dressing the blocks.

A preparation of asphaltum, or its equivalent, is cast around the separate rough blocks of stone, placed in suitable moulds to give the block coated with asphaltum the desired shape, as, for instance, tongued and grooved as shown in the figure.

The block of stone is heated before the asphaltum is cast around it, by means of which the compound is made to adhere thoroughly to the surface of the stone.

*Claim*.—Effecting the thorough union of the asphalt compound, or any equivalent therefor, and stone, by heating the blocks of stone previously, substantially as specified.

No. 12,172.—CHAPMAN WARNER.—*Improvement in Cast-iron Pavements*.—Patented January 2, 1855. (Plates, p. 155.)

Longitudinal bars *a* are laid down parallel to each other and at equal distances. They are represented in a top view in fig. 1, in a perspective view in fig. 4, in an elevation in fig. 2, and in a cross section in fig. 3. The indentations *b* serve to present a somewhat roughened surface. The keys or cross-bars *i*, (fig. 1, top view; fig. 3, front view; fig. 2, sections,) which are wider at the bottom, and have the proper

profile, so as to fit exactly the tapering body, the rib *e*, and the square head of the bars *a*, are driven between these bars till they abut against the small projections *d f*, when they are secured by little cross-pins which are to be driven through the holes *h* in the bars *a*. The last row of keys is inserted at an angle, and driven in its place as represented in *i y*, fig. 1.

*Claim*.—The above described bars connected, sustained, and bound together by the keys or cross-pieces, substantially in the manner and for the purpose set forth.

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No. 12,755.—GEORGE NEILSON, assignor to GEORGE NEILSON and NEEMIAH HUNT.—*Improvement in Cast-iron Pavements*.—Patented April 17, 1855. (Plates, p. 155.)

The inventor says: I do not claim a pavement-block of a hexagonal form, nor with a perimeter formed by six hexagons disposed around a common or central hexagon, as shown in fig. 4.

But I do *claim* making a paving-block with a perimeter of thirty faces, arranged as shown in fig. 1, and formed by sixteen hexagons or hexagonal prisms disposed with respect to one another, as therein represented; the same enabling such a block, where it abuts against a contiguous block when laid in a pavement, to be supported by a semi-hexagonal projection and recess, as described.

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No. 12,130.—ALEXANDER HOLMSTROM.—*Improved Apparatus for Atmospheric Pile-Driving*.—Patented January 2, 1855. (Plates, p. 155.)

A is the hollow pile, and B the air-lock, its base being bolted upon the head of the pile, thereby forming the cap, equivalent to the usual mode. Supposing the hollow pile to have been sent down by the vacuum and to have become arrested by an obstruction, the force of the compressed air is now to be employed to empty the water and leave the obstructing object bare for removing it. Cover *b*<sup>1</sup> is taken away from man-hole *b*, and a length of pipe sufficient to reach near the bottom is bolted upon flange *i*<sup>1</sup> of discharge-pipe *i*. Cover *b*<sup>2</sup> is then raised to close hole *b* from within. Now the air-pumps force air in through hole *h*, and man-hole *c* being open, the pressure extends through both air-lock and pile, keeping up cover *b*<sup>2</sup>. The pressure upon the water's surface forces it out through discharge-pipe *i*, after which the workmen can descend. Now the operation on the bottom commences. The shaft of windlass C is kept in continual rotation from without, and the windlass is thrown in or out of gear from within. The matter hoisted into the air-lock is removed therefrom without disturbing the workmen. Cover *c*<sup>2</sup> is shut up against *c*, cock *d* opened, and the compressed air rushing out, an equilibrium is produced causing cover *b*<sup>2</sup> to fall open, the pressure being still maintained within A by the force-pumps continuing to work. The matter being removed from the air-lock, cover *b*<sup>2</sup> is once more closed against *b*, air-cock *k* opened, and the pressure in air-lock and pile equalized, allowing cover *c*<sup>2</sup> to

fall open, and restoring again the communication between air-lock and pile.

As soon as the men desire to come out they open air-cock E, whereby the pressure is taken off and the cover  $c^2$  allowed to open.

Pipe  $g$  leads to the exhausted receiver or to the air-pumps.

*Claim.*—1st. Constructing the "air-lock" in such manner that the pressure of the air, either within the lock or within the hollow pile, may be governed by the workmen inside, whereby they are thus enabled wholly to control the means of escape for themselves.

2d. Combining with the air-lock a hoisting-apparatus, to which the moving power is given from the outside of the lock; but the application of that power to the windlass is made by the workmen within, whenever the same may be required, whereby those men are not only relieved from any extra exertion, but the ability is also maintained of applying greater force than could be done were the motive power given from within: the whole being constructed and operating substantially as set forth herein.

No. 12,789.—JAMES FLEMING.—*Improved Machine for Sawing off Piles under water.*—Patented May 1, 1855. (Plates, p. 155.)

The machine is suspended by the ring  $k$ , and is brought towards the pile with the jaws B opened till the pile is embraced within said jaws. The whole machine is then lowered approximately to the depth required by the sawing. The jaws B are then closed around the pile by turning the capstan-wheel  $f$ , which moves the pinion  $c$ , and brings together the opposite extremities of the tongs by means of the curved rack  $d$ ; the pawl  $h$  is then thrown into the ratchet  $g$ , and secures the hold of the jaws. The shaft E is then secured in its position, and an exact adjustment of the saw to the proper depth is made by means of the turn-buckle  $p$  operating upon the screw-rod  $q$ , which raises or lowers the arm  $F^1$ , carrying the lower end of shaft G, to which the saw is fixed. The upper end of the saw-shaft slides freely through the box  $l$  in the upper arm F; which arm F cannot move, as set-screws  $o$  confine the bosses of an arm L between the bosses  $m m$  of arm F. The pulleys J, K, I, transmit motion to the saw H. The feeding up of the saw to the pile is effected by means of pinions  $d^1 d^1$  in the ends of the arms L  $L^1$  and the curved racks  $t t^1$ . The lower arm L, acting by means of feather  $n$  in the spline  $n^1$ , moves up or down together with arm  $F^1$ . But both arms L and  $L^1$  cannot swing round the fixed shaft E, and they form the fixed points of resistance from which the arms F  $F^1$ , carrying the saw-shaft, are moved; the pinions  $d^1 d^1$  consequently acting upon the curved racks  $t t^1$  fixed to the ends of the arms F  $F^1$ , communicate a horizontal motion to these latter arms, which carry the saw towards the pile, the feeding being regulated by the hand feed-wheel  $z$ .

*Claim.*—The combination of a circular-saw and its shaft carried in movable arms upon and around a stationary shaft, which sustains the driving-pulleys, and which is fixed to an adjustable tongs or clamp,

substantially as above described, for the purpose of cutting or sawing off piles under water.

Also, the method of fastening to the pile to be sawed by means of a clamp or adjustable tongs with suitable jaws and teeth, as above described.

Also, the method of feeding a circular-saw from points of resistance fixed upon a stationary shaft by means of arms, curved racks, and pinions, as above set forth.

No. 12,300.—JOHN M. BULL.—*Improvement in Hand-Rails for Stairs*.  
Patented January 23, 1855. (Plates, p. 155.)

The inventor states that railing is stronger and easier made by composing its curved parts of single blocks 1, 2, 3, &c., and connecting them by a curved bolt-rod A and nuts B, than when it has to be cut out of the solid block.

*Claim.*—Joining a series of blocks of wood or other material together at such angles as will form any circle or curve that may be required, and secure the same together by means of a rod provided with a screw and nut at each end, or any other mechanical equivalent, all as represented, and for the purpose substantially as specified.

No. 13,956.—GEORGE B. PULLINGER.—*Improvement in Automatic Gates for Railroad-Crossings*.—Patented December 18, 1855. (Plates, p. 156.)

The automatic gates, or barrier-bar A, consist of rods extending the full width of the crossings, one on either side of the railroad-track; at right angles with this, rods are bent; the side-bars A<sup>1</sup> pivoted at their centres to uprights B. Said side-bars have weights attached to their ends sufficient to keep them always in a raised position when not operated upon by vehicles or other objects. One of the side-bars of each of the gates is provided with upright connecting-rods C D, jointed to it near its fulcrum. The connecting-rod C<sup>1</sup>, on the inside of the bolt, is attached to an inclined bar, secured to the end of the raising and falling flap E, extending the full width of the passage; said flap turning on a bar upon uprights fixed in the ground. The other connecting-rods D, outside the bolt on which the side bar moves, are jointed in a similar manner to other movable flaps F, arranged between flaps E and the railroad track. The up-and-down movements of flaps E and F are independent of each other; the slots in the inside connecting-rods C<sup>1</sup> allowing the bolts passing through them to rise freely without affecting the flaps E when the flaps F are depressed, and with them the barrier-bars, and yet enabling the said barrier-bars to be depressed when the said flaps E should be depressed. On the ends of the flaps E, opposite to those where the connecting-rods C and D are attached, are secured studs G; immediately under these studs are arranged upright-bars H, joined to a permanent structure. The railroad-track can be crossed when bar H is drawn from beneath projection G, or forced back by spring I; then only (when flap E has a free downward movement) the

barrier-bar A can be depressed and the crossing opened. The mechanism to operate bar H, by the approach of a train, is composed as follows: When the inclined bars N N, projecting above the track at a distance from the crossing of say 300 yards, are depressed by the rim of the wheels of the locomotive, the rock-shaft P is turned by the arms O, so that through radial arms *q* and rods R R<sup>1</sup> the lever M will be pushed back against spring M<sup>1</sup> and permit lever K a free vibration on its centre; spring I is then allowed to move bar H beneath projection G, and thus prevent the opening of the gate. After the train has passed the crossing, the tread of the wheels depresses another inclined bar V, situated at a distance from the crossing sufficient to allow the longest train to pass it before reaching said bar V, the depression of which causes rock-shaft V to turn; and by means of rods 1 and 2, jointed to said rock-shaft Y by double radial arms Z, lever 3, fixed on the axis of lever K, will make a vibration and thereby replace said lever K in the notch of lever M, by aid of spring M<sup>1</sup>, and bar H is removed from beneath stud G. After the train has passed the crossing, nothing will prevent the opening of the barrier-bars or gates. Figures 2 and 3 represent only about one-half of the longitudinal sections, the other half being exactly alike; *x x* indicates the centre line of the crossing. The construction of the flaps E F and appurtenances being similar on both sides of the track, fig. 1 represents it only on one side of the track.

*Claim.*—The combination of the mechanism attached to the railroad-track, and operated upon by the locomotive or cars for detaching from and bringing in contact the notched end of lever M with the end of the vibrating-lever K, with the upright spring-levers H, studs or projections G, on the ends of the flaps E; and the means of operating the flaps E F and gates or barrier-bars so as to enable the said gates or barrier-bars to be depressed by the weight of the horse, or other object, when no danger is to be apprehended from the near approach of the locomotive or cars; but prevent the said gates or barrier-bars being depressed to allow the passage on the track of any object, after the locomotive or cars having reached a point on the track sufficiently near the crossing to render the passage of such object unsafe, and yet allow the said object to depress the gate or barrier-bar, through the agency of the inner flaps F, to get out from between the same, in case the locomotive or cars should have reached the point where it operates on the inclined bars N, to prevent the depression of the outer flaps E, and consequently of the gates or barrier-bars through this agency, until after the passage, by the crossing of the said locomotive and cars, in the manner and for the purposes described.

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No. 13,235.—SOPHIA B. SPAFFORD, administratrix, and GEORGE ALEXANDER, administrator of the estate of SIMEON L. SPAFFORD, deceased.—*Improvement in Railroad Draw-Bridge Signals.*—Patented July 10, 1855. (Plates, p. 156.)

The signal-boards A are painted red on one face and white on the other. The lanterns are so placed that when the white face of the boards is exposed to view, the white lantern is seen below the boards

(see figure 1); and when the red face of the boards is exposed, the red lantern is seen above the boards (see figure 2). The boards are connected with the frame B by a revolving-joint, and attached to the sliding-frame C, which is moved vertically in grooves in frame B by the jointed-levers K; one lever being attached to each signal-board. The sliding-frame is attached to lever G by connecting-rod F. The signal is applied to a draw-bridge, or any revolving or reciprocating structure; the stop-lock H passing down from the lower side of the signal-lever G into a notch in the sub-structure. To move the stop-lock down into its notch, the horizontal sliding-plate L M must be drawn into position L<sup>1</sup> M<sup>1</sup>, so as not to interfere with the downward-motion of H. Through one arm of the latch-lever I passes the end of a horizontal-lever, connected with the latches by rods; and the fulcrum of the horizontal-lever is fixed at such a point, that when the horizontal-arm of the latch-lever is drawn back, the draw-bridge is latched or fastened. To unlatch it the boards A must first be turned by raising lever G; which operation also elevates stop-lock H so as to permit plate L M, attached to the latch-lever, to slide into position L<sup>1</sup> M<sup>1</sup>. Latch lever I can then be moved aside. In raising the stop-lock, the rod F at the same time raises the sliding-frame. Thus the signal-boards are made to describe a semi-circle, thereby exposing the red face of the signal-boards and the red lanterns above them.

*Claim.*—1st. The combination of the sliding signal-frame C, the signal-boards A A A A, the signal-lanterns D, and the signal-lever G, arranged and operating in the manner and for the purpose substantially as described.

2d. The combination of the sliding signal-frame C, the signal-boards A A A A, the signal-lever G, and the stop-lock H, arranged and operating in the manner and for the purpose substantially as described.

3d. The combination of the latch-lever I, the signal-lever G, and the sliding-plate L M, arranged and operating in the manner and for the purpose substantially as described.

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No. 13,378.—JACOB BUSSEY.—*Improvement in Railroad Signals.*—Patented August 7, 1855. (Plates, p. 157.)

T is the railroad track. A train coming towards the draw will pass over and depress cam A, and thereby sound the alarm simultaneously on the bell H<sup>2</sup> at the draw and on the bell H on the road, so as to give the engineer on the locomotive warning that the draw is open. The act of closing the draw moves (by means of proper mechanism) the bells aside, so that no alarm will be given when the draw is closed. When the train runs from the draw the cam B will be depressed, the rod *r* passes through a slot in spring C, and pressing on rod E frees the catch at the end of rod E from the spring C. After the wheels have passed, the cam B and rod *r* rise to their former position, and the end of the spring is again in the catch ready for action.

The inventor says: I do not confine myself to the bells for producing the alarm, as the same may be effected by means of a gong or any other suitable device. Nor do I confine myself to placing the parts

above and below the ground, as shown and described, as it may be better that the parts be all placed under ground, excepting the bells and hammer, or their equivalents; the bells, spring, cams, &c., have all been used in various ways for producing alarms; I therefore do not claim them separately.

I am aware that signals of various kinds have been so arranged and connected to a railroad track as to be operated by the passing locomotive. These I do not claim, independent of my special means of arranging and operating them.

I *claim* the combination of the cams A B, spring C, and the rod E, operating upon the bell or its equivalent H<sup>2</sup> and spring P, which are placed upon the draw of the bridge; so that a locomotive in approaching the draw will sound the alarm, whilst a locomotive coming from the draw will pass over the same cams without sounding the alarm, substantially as described.

No. 12,505.—C. M. EAKIN.—*Improvement in Excluding Dirt from Grooved Railroad Rails*.—Patented March 13, 1855. (Plates, p. 157.)

This improvement refers to the grooved rails used for railroads passing through cities, and it consists in the application within the groove of India-rubber B that will yield to the flanges of the railroad wheels as they pass over it, but after the wheels leave it free will spring up again level with the face of the rail.

*Claim*.—The application of an elastic filling to the groove which is formed in the track to receive the flanges of the wheel, substantially as and for the purposes set forth.

No. 12,704.—ISAAC R. TRIMBLE.—*Improvement in Wooden Splice-piece for Railways*.—Patented April 10, 1855. Antedated October 10, 1854. (Plates, p. 157.)

No description required.

The inventor says: I *claim* the combination of a wooden splice-piece strong enough to resist the lateral and vertical disturbances to which the adjacent ends of rails are liable, in combination with any form of rail competent to its purpose, without other support throughout than its own stiffness, the said splice-piece and rail, in the combination now claimed, being fastened together and fastened down in the manner heretofore described.

I am aware of a patent granted to B. H. Latrobe for a combined rail of wood and iron, where the two are bolted together throughout, the wood and iron breaking joints; but the rail in this case is a rail which is incapable of being used by itself, its form being peculiar and relating to its combination, while the combination made by me is with the rail in common use, and is capable of being substituted on such rail without other preparation than drilling or punching the bolt-holes in place of any of the chains or fastenings now in use.



No. 13,051.—HOSEA D. SEARLES.—*Improvement in Guard-Rails of Railroads, to be used with Pronged Cow-Catchers*.—Patented June 12, 1855. (Plates, p. 157.)

Guard-rails or ribs *d* are laid parallel with the usual rails *c*, projecting considerably above the latter, so that the prongs *P* of the cow-catcher shall run between them for the purpose of preventing accidents caused by obstructions lying on the rails too low to be turned aside by the cow-catcher.

The inventor says: I am aware that several patents have been granted for central guard-rails on railways, and that cars have been fitted with central wheels to run on such central rails.

I am also aware that cars have been fitted with instruments like plough-shares, to remove obstructions from the rails, in front of both the side and central wheels of the cars, of which Le Blanc's cars, patented in France, and Ashcroft's, patented in this country, are examples; but I am not aware that, prior to my invention, any one ever placed a series of guard-ribs, elevated considerably above the rails, the entire length of the track, and arranged the fingers of the cow-catcher to run between and outside of such ribs. Neither do I know that any other device, the equivalent of this, for taking up and preventing cars from running over limbs of trees or fence-rails laid across the track, has ever before been invented.

Therefore, I *claim* the combination of elevated guard-ribs with the track, when the same are so arranged that the prongs of the cow-catcher of the locomotive may run between them, substantially as set forth.

No. 12,352.—ALPHEUS KIMBALL.—*Improved Machine for Repairing Roads*.—Patented February 6, 1855. (Plates, p. 157.)

*B B* is the frame of the machine; one of the cross-timbers *E* of which supports a post *F*. To the bottom of this post is pivoted at *a* the sole and land side-piece *b*. The forward end of the sole, which carries the point *G*, is suspended from lever *H* by means of post *I*. The lever *H* has its fulcrum in post *M*, which extends from cross-piece *L*. By means of this lever *H*, the plough-point may be raised or lowered, and with it the mould-board *O*, which is attached rigidly to the sole *b*, and is pivoted at its rear end to the piece *P*, which piece is attached adjustably (by means of slot *n* and screw *m*) to the frame *B*. The mould-board is made of sufficient length to reach half-way across the road, and has secured to its bottom surface the serrated scraper *Q*. In hard soil the resistance upon the point of the plough would tend to swivel the whole machine out of the direct line of motion; to counteract this tendency, the hind axle *D* is pivoted to the frame *B* at *q*, and the axle may be secured in various oblique positions by passing pin *r* through either one of the holes *s* into a corresponding hole in the axle.

*Claim*.—The described machine for making roads, consisting essentially of the combination of the plough and scraper, constructed in the manner set forth, and suspended from the lever *H*.

2d. Pivoting the rear axle, and securing it to the frame-work in a position oblique to the direction of motion, for the purpose described.

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No. 13,052.—SAMUEL TAYLOR.—*Improvement in Plank Roofs for Buildings*.—Patented June 12, 1855. (Plates, p. 157.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim making a roof by means of plain boards rectangular in section, or by curved tiles made to overlap each other so as to break joints, nor by means of slates reposing on or supported by rafters provided with grooves or channels under the contiguous slates.

But I *claim*, in making roofs with overlapping wooden boards, to make each of the boards of saddle-form, as described, in order that, when laid together in manner as described, their contiguous plane-surfaces may not only lie in close contact, whereby they will add greatly to the stability and efficiency of the roof, but be so inclined as to prevent water from remaining between them, and causing or promoting their decay; my intention not being a mere change of form, unattended with any advantage, but one productive of new and useful results, in making roofs of wooden boards.

I also claim the improvement of providing each of the grooves of the upper boards with an inserted metallic or water-tight lining of trough z, for the purpose of protecting the joint directly under the same, when the boards become cracked or split, as described.

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No. 13,906.—GOTTLIEB GRAESSLE.—*Improvement in Tile Roofing*.—Patented December 11, 1855. (Plates, p. 158.)

The object of this improvement is to make a tile roof more weather-proof than those customarily employed.

*Claim*.—The construction, substantially as described, of tile roofing, having each overlapping edge *a* resting by an angle only upon the flat sublying surface *b* between the ridges *c d* of the adjacent tile, and having two transverse ridges *e f* on the top of each tile, enclosed by similar ridges *g h* projecting from the superjacent under-surfaces of the tier next above, for the purposes explained.

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No. 12,785.—DAVID RUSSELL.—*Improvement in Window-Sash Supporters*.—Patented May 1, 1855. (Plates, p. 158.)

The fasteners C, which are curved as shown in figure 4, press against the side instead of the bottom of the groove E, as is apparent from inspection of the figures. Thus the sash is kept constantly pressed back against the edge of the offsets *f*, thereby rendering the joint airtight, or nearly so. This side pressure could not be obtained without making the stop-fastener in a curved form, for a straight fastener could not be operated diagonally through the side of the groove E, as the

thickness of an ordinary sash will not admit of such an arrangement. The fasteners are operated by pulling the rings *c*. The offsets *f* extend the whole height of the frame, the lower sash B being wider than the upper B<sup>1</sup>.

The inventor says: I do not claim operating the stop-fasteners by means of spiral springs, as the same function might be performed either by elliptic springs or weights and pulleys.

But I do *claim*: 1st. The curved form of the stop-fasteners, constructed in the manner and for the purpose as herein described.

2d. The offset *f* in combination with the fasteners, for the accomplishment of the object as herein described.

No. 12,828.—LYMAN E. PAYNE.—*Improvement in Window-Sashes*.—Patented May 8, 1855. (Plates, p. 158.)

When these sashes are closed they will be fitted tight between the casing, because the edges of the strips *d d'* and the shoulders of the rebates *c c'* will bind together; and at the same time the sashes may be easily opened, because then the inclined surfaces of the strips and shoulders recede from each other.

Figure 1 represents only one half of the front view of the window, the other half being exactly alike.

*Claim*.—Arranging or adjusting the sashes within the frame or casing, as herein shown and described, viz: having strips *d d'* attached to the inner side of the frame or casing, the outer edges of the strips being inclined or bevelled, as shown, and fitted within rebates *c c'* in the inner surfaces of the stiles *a* of the sashes, the shoulders of said rebates being inclined or bevelled so as to correspond inversely with the edges of the strips *d d'*, for the purpose as herein set forth.

No. 12,833.—CHARLES R. RODE.—*Improvement in Sash-Supporters*.—Patented May 8, 1855. (Plates, p. 158.)

No description is required.

*Claim*.—The construction of the fastening, as herein shown and described, viz: having a longitudinal shaft or rod C inserted in the lower cross-piece of the sash B. A pawl *a* being attached to each end of the shaft or rod, said pawls catching into racks *b*, attached to the back sides of the grooves in which the sash is fitted, the shaft or rod being provided with a thumb-piece D, which projects through a mortise or slot *c* in the cross-piece of the sash, and directly over a plate E attached to said cross-piece, as herein shown and described. (See illustration.)

No. 12,854.—HANDEL S. CHAPLIN.—*Improvement in Window-Sash Fixtures*.—Patented May 15, 1855. (Plates, p. 158.)

A spring-locking bearer D is arranged (above the upper sash when it is depressed) in the jamb *a* of the window-frame. A similar spring-bearer E is arranged below the upper sash when it is elevated to its highest position. From these two springs two bent retractive arms F

G extend, one above and the other below and behind the rocker-shaft H, which has two cams I and K opposite to each other. By turning the knob L of the rocker-shaft in one direction, one of the cams will draw back its spring-bearer; by turning the knob in the opposite direction, the other cam will cause the other spring-bearer to retract.

The inventor says: I do not claim the application of a friction-spring or bolt to a window-frame and sash, and for the purpose of either holding by friction the said sash at any elevation within the limits of its motion, or of locking said sash so that it may not be either raised or lowered from the outside of the window.

But I do *claim* the arrangement of two spring-friction bolts, their retractive arms, cams, and one rocker-shaft, together, and with respect to two window-sashes, and so as to operate in manner substantially as specified.

No. 13,032.—WILLIAM S. FORD.—*Improvement in Window-Sashes*.—Patented June 12, 1855. (Plates, p. 159.)

The sash B is just like the upper sash of ordinary windows. The French window-sashes C are hinged to strips *g*, which work in dovetails between stop-beads *h* and the parting bead *b*. Cords and weights *i j* serve to raise or lower the French sashes. The back-stiles of the sashes C are provided with lips *l*, which, when the sashes are closed, fit in recesses *m*, in the back sides of the strips *g*, and form a weather-proof joint.

The drawings exhibit only one half of the window, *x x* being the centre line.

*Claim*.—Constructing folding, hinged, or French windows as shown, or in an equivalent way, so that the hinged sashes *c c* may be raised and lowered the same as the ordinary sliding-sashes, and also be allowed to swing as French sashes, whereby said sashes are kept closed without the application of any special fastening, and also rendered perfectly weather-proof, as described.

No. 13,124.—DANIEL N. DUNZACK.—*Improved Mode of Hanging Window-Sashes*.—Patented June 26, 1855. (Plates, p. 159.)

In this method of hanging sashes there is only one weight B used within each box *a*.

The engraving represents only one half of the window, the other half being exactly alike.

*Claim*.—Attaching the cords *c* to the lower ends of both sashes C D, and having said cords pass through pulley *b* attached to the weights B, the cord at each side of the frame or casing being attached to both sashes, said cords passing over pulleys *d d* at the centre of the frame or casing, substantially as shown and described.

No. 13,435.—L. E. PAYNE.—*Improved Mode of Hanging Window-Sashes.*—Patented August 14, 1855. (Plates, p. 159.)

The cords *a a* are at one end secured to the upper sash *B*<sup>1</sup>; the other ends pass down by the sides of the lower sash *B*, and underneath the same and through an eye *b* in the under edge of *B*, and are united by twisting or any other fastening. When one sash is raised, the other will descend. But if it is desired to raise the lower sash only, the ends of the cord underneath sash *B* are held by one hand down upon the sill of the casing *A*, and the lower sash may be raised without moving the upper one, and it may then be retained in a raised position by fastening the cords underneath the sash *B* in any proper manner.

The inventor says: I do not claim attaching the cords *a a* to each sash, so that one sash will balance the other, for that has been previously done; but I *claim* applying the cords *a a* to the sashes *B B*<sup>1</sup>, as herein shown, viz: the cords passing around the lower sash, so that the cords may work around the lower sash *B*, or said sash *B* may be raised or lowered without moving the cords, as described, for the purpose set forth.

No. 13,764.—J. W. ROSS.—*Improved Mode of Hanging Window-Sashes.*—Patented November 6, 1855. (Plates, p. 159.)

When the two pulleys *b b*<sup>1</sup> are connected to the pulley *E*, one sash will be lowered while the other is raised; because the straps *C F* pass around their respective pulleys in opposite directions, and consequently one sash will balance the other. When it is desired to raise the lower sash, and keep the upper one in proper position, the pulley *E* is disconnected from the pulleys *b b*<sup>1</sup> by operating the spring-lever *I* and shoving shaft *B*<sup>2</sup> back, free from the projections *d* on the side of pulley *b*<sup>1</sup>. One of the projections will then catch against stop *g*, and the stop will prevent pulley *E* from turning, and consequently retain the upper sash *B* in proper position. The sash *B*<sup>1</sup> may then be raised without moving the upper sash, the elastic band *D* taking up the slack of strap *C*.

Strap *C* is fastened to the lower edge of sash *B*<sup>1</sup>, and strap *F* to that of the sash *B*.

*Claim.*—Attaching the straps *C F* to the sashes *B B*<sup>1</sup>, said straps passing in reverse direction around pulleys *b E* on a shaft *B*<sup>2</sup>, in the stile *a* of the casing *A*, the pulley *E* being attached permanently to the shaft *B*<sup>2</sup>, and the pulley *b* placed loosely upon it, and the pulleys *b E* being connected and disconnected when desired, as shown, the pulley *b* having a pulley *b*<sup>1</sup> attached to it, to which pulley an elastic band *D* is attached, said band being also attached to the sash *B*<sup>1</sup>, the above parts being otherwise arranged substantially as shown, and for the purpose set forth.

No. 13,774.—MICHAEL BOMBERGER.—*Improvement in Hanging Window-Sashes.*—Patented November 13, 1855. (Plates, p. 159.)

Fig. 2 represents an inside view of the "rope hider" *A*, which consists of a piece of wood grooved and fitted in the window over the rope

and pulley, in such manner as to allow the rope to run within the groove, while the sash moves along the back of the grooved piece.

*Claim.*—The application to window-frames, in which ropes and pulleys are used to support the sash, of the piece described, called the "rope hider," using, for the purpose of concealing from view the ropes and pulleys, a strip of wood or piece of any other material which will produce the intended effect.

No. 13,863.—E. W. BULLARD.—*Improved Mode of Hanging Window-Sashes.*—Patented December 4, 1855. (Plates, p. 159.)

The sash may be raised by taking hold of the sash with one hand and the crank *n* of the pinion *l*; and when the sash is in the desired position, it may be confined therein by turning pinion *l* so as to raise its wedge *i* sufficiently to bind it there; and if said sash binds at times too much in moving, it may be relieved by lowering its wedge a little. It will be seen that the bevel of the sash and its wedge is so great, that if the sash be lifted, independently of its wedge, to a sufficient height, it may be removed without difficulty and without removing the confining strip of the window-frame.

*Claim.*—The improved mode described of hanging and fastening sashes, which consists in bevelling one side of the sashes, and combining therewith a corresponding wedge or bevelled strip, moved up and down as described, or in any other way, by which arrangement the modes set forth of fastening, loosening, and removing the sashes from the frame are secured.

No. 12,168.—FRANCIS RUDOLPH.—*Improvements in Elevating-Scaffolds.*—Patented January 2, 1855. (Plates, p. 160.)

This scaffold (the construction of which is plainly shown in the engraving) can readily be elevated, according as the work is carried up, to any height desired, without increase of expense, and with little trouble.

*Claim.*—The arrangement and combination of the centre-pole A and the scaffold C, the former usually being placed *within*, and the latter *about* the structure to be built, each of which may be elevated as desired, and the whole being constructed substantially in the manner before described.

No. 13,086.—ABRAHAM C. FUNSTON.—*Improvement in Scaffolds.*—Patented June 19, 1855. (Plates, p. 160.)

To render the scaffold convenient for use on buildings having porticoes or steps, the back upright of one or all of the sections A A<sup>1</sup> A<sup>1</sup> is made in two parts as at G (figure 2); a slot is provided in the lower part, and the latter is coupled to the upper part by straps *e<sup>1</sup> e<sup>1</sup>*, and firmly secured by set-screw H, so that, by simply loosening this set-screw, (which plays in the slot in the lower part,) it may be elevated and made to rest upon the steps.

*Claim.*—Making the back upright of one or all of the sections or frames forming this particular scaffold in two parts, and providing the lower part with a slot, and uniting it to the upper part by a set-screw, which plays in the slot and allows of the lower part being raised, substantially as and for the purpose set forth.

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No. 13,810.—REUBEN W. OLIVER, assignor to HIMSELF and HORACE HOYT.—*Improved Road-Scraper*.—Patented November 13, 1855. (Plates, p. 160.)

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I do not claim making the height of the scraper adjustable upon a frame supported upon wheels, as this has already been done.

But I *claim* supporting the forward end of the scraper upon levers which rest upon the wheel B, or their equivalent, as a fulcrum, and extend back of the scraper for the purpose of operating conveniently the back end of the scraper, resting upon a fixed support, as set forth.

2d. I claim hanging the bottom of the scraper to the side, as set forth.

3d I claim securing the return of bottom E to the position for loading, by the chains P, or their equivalent, attached to the said bottom E and to the levers F, as herein set forth, or any other manner substantially the same.

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No. 12,994.—P. J. COOGAN.—*Improved Arrangement of Drains for Sewers*.—Patented June 5, 1855. (Plates, p. 160.)

The water, slops, &c., are thrown upon grate C, and fall upon the inclined bottom *a* of chamber B. The sediment is carried down on said inclined bottom. The water passes through the apertures *b* into compartment D; the sediment settles to the bottom of this compartment, and, when the water reaches the upper end of the curve of syphon I, the water will flow into compartment E; when the water reaches the upper end of the curve of syphon J, the water will flow from E into inclined passage K. Thus all heavy matter will be prevented from entering the passage K, because it will settle at the bottom of D before the water reaches the syphon I.

I *claim* the box or receiver A, provided with syphons I J, and otherwise arranged as shown, for the purpose as set forth.

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No. 12,354.—ROBERT A. SMITH and JOHN HARTMAN, Jr.—*Improved Street-Sweeping Machine*.—Patented February 6, 1855. (Plates, p. 161.)

Upon the axle of the driving-wheels W is a loose cog-wheel D, having hinged to one of its arms *x* a stud *u*, held in position by spring *v*, so that when said stud projects from the wheel D it will enter between two of the spokes of the wheel W and rotate wheel D on axle *w* simultaneously with W. When the stud is folded upon the arm *x*,

(see dotted lines, fig. 2,) the rotation of D will cease, and with it the motion of the endless chain of brushes.

The inventors say: We make no claim to the employment of the endless chain of brushes or the movable inclined plane, neither do we claim of itself the detachable dirt-receiver or the receiver when arranged and operated as in the patented machine of J. Whitworth.

But we *claim* the described arrangement of detachable receiver R beneath the forward portion of the frame, suspended by chains *m* and *n*, attached to hooks *q* on the receiver, from the pulleys *f*<sup>1</sup> and windlasses *p p*<sup>1</sup>, so that an empty receiver may be substituted for a filled one with great facility, and the filled receiver removed by a tender, as set forth.

We also claim constructing the rear portion of the inclined plane with wheels or rollers *h* and tail-piece of loose sections *l*, as set forth, so that the rear of the machine may rest on the ground and conform to the inequalities of its surface.

We further claim the employment of the hinged-stud *u* in connection with the driving-wheel W and loose wheel D, for operating the endless chain of brushes, as set forth.

No. 13,830.—M. W. ST. JOHN and ISAAC BROWN.—*Improved Street-Sweeping Machine*.—Patented November 20, 1855. (Plates, p. 161.)

The swivel-wheel J, which supports the back part of the machine, is connected by means of bar N to the back end of draught-pole L, for the purpose of allowing the machine to turn readily. As the machine is drawn along, the shaft E will rotate when lever I is moved, so as to throw the clutches G G in gear with the pinions F F; and the endless apron X is operated by the belt *r* and the bar T, and brooms W are moved back and forth by the pitmans P P, the brooms being elevated during their backward movement (see position of broom W represented by dotted lines in fig. 1) in consequence of bar T being attached to the pitmans a certain distance from their points of attachment to the shaft Q. The brooms as they move towards the apron X sweep the dirt from the ground upon it, and the apron conveys the dirt to one side of the machine and deposits it in winrows in the street.

*Claim*.—1st. The reciprocating brooms or brushes W attached to a bar T, which is connected with the pitmans P P, the parts being arranged as shown, or in an equivalent way.

2d. The endless apron X placed underneath the machine for the purpose of receiving the dirt from the brooms or brushes W, and conveying it from underneath the machine and depositing it in winrows in the street, as described.

3d. The combination of the endless apron X and reciprocating brooms or brushes W, arranged as shown and described.

4th. Connecting the swivel-wheel J with the back end of the draught-pole L by a bar N, substantially as shown, for the purpose specified.

5th. Placing the driving-wheels C C and pinions F F loosely on their respective shafts, and operating the ratchets G G by means of the flanchd sliding-plate H, substantially as shown, for the purpose of



throwing the working parts of the machine in and out of gear with the driving-wheels.

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No. 12,496.—WILLIAM W. WILLIS.—*Improved Mode of Extracting Stumps*.—Patented March 6, 1855. (Plates, p. 161.)

The nature of this improvement will be plainly understood from an inspection of the engravings.

The team is attached at C; and as the team draws either in the direction of the arrow or opposite to it, the draught-chain I is connected either to K or to J.

The inventor says: I do not propose to claim either the draught-hook, the shears, or the pulley, by itself; as neither can of itself, nor any two of them, perform the functions for which, after much thought and many experiments, I discovered that all three acting in connection were indispensable.

I claim the combination of the draught-hook R, shears H, and pulley N, substantially in the manner and for the purpose set forth.

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No. 12,525.—EDWARD VAUGHN.—*Improvement in Stump Machines*.—Patented March 14, 1855. (Plates, p. 162.)

Screw E passes through nut D, and nut D fits into a square mortise in the sweep C, and rests in a square recess *m* in hub B, which hub is bolted to the sweep and has an inverted groove *k* in its lower end, which rests on friction balls *l*. *p* are levers, *r* fulcra, and *q* hinges for elevating the frame and attaching the trucks H to sills *c*; dog *v* is thrown back by a cord at top of lever I, permitting axle *u* to pass down the posts *t* and rest on plates *s*. Spiral spring *z* throws the dog *v* over the axle *u*, and the machine is loaded. Bar K is screwed to hounds J by bolts *i* passing through slots *a*<sup>1</sup> in said hounds; the bolts have lugs *c*<sup>1</sup> at one end and rings *d*<sup>1</sup> at the other, and are fastened by turning said rings at right-angles and throwing them over pins *e*<sup>1</sup>.

The inventor says: I claim the arch-beams *d d*, the brace-posts *b b*, in combination with the inclined braces *c*<sup>2</sup> *c*<sup>2</sup> and horizontal beams *a*, making a new and useful, firm and compact frame, as set forth.

Also, the combination of a half sphere and groove *l*, forming a new half-spherical washer *g*.

Also, the combination of the groove *k*, opening *j*, with a square recess *m*, for the purpose as set forth.

Also, for the purpose of attaching and detaching the trucks H H to and from sills *c*, by the combination of levers *p p*, fulcra *r r*, joints *q q*, posts *t t*, dogs *v*, and levers I, as set forth.

Also, the securing of the bar K to the hounds J J, as set forth.

I do not claim any one separate thing in the above-mentioned invention, but I claim the combination as set forth.

No. 13,088.—STEPHEN GORTON and FRANCIS MORRIS.—*Improved Stump Machine*.—Patented June 19, 1855. (Plates, p. 163.)

This apparatus is rolled over a stump, so that shaft A will come to or over the stump. The chain F is then hooked around the root of the stump, and the power is applied either to the hook E or the rope around pulley D. As the power draws the small end of the shaft in one direction, the wheel B will roll in the other direction and wind up the chain, and thus lift the stump.

*Claim*.—The construction of the machine after the manner described, to wit: with a main shaft and wheels, as described, with the larger wheel B fastened on to the shaft, and the lesser wheel C constructed so as to turn on the shaft, or any other construction substantially the same.

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No. 13,059.—GOTTLIEB GRAESSLE.—*Improvement in Tile Machines*.—Patented June 12, 1855. (Plates, p. 163.)

There are three or more moulds, consisting of halves 1 and 4, 2 and 5, 3 and 6. These halves are attached to two endless chains Q and B, so that (as the chains revolve with equal velocities) each two will meet in the centre between the pressure-rollers *l* and *m*, and (the clay having been supplied to the mould before it arrived at the centre) the tile T will be formed.

The engraving represents the chains in strong broken lines.

*Claim*.—The combination of the two endless chains, corresponding moulds, and pressure-rollers, formed and constructed substantially as described.

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No. 12,595.—THADDEUS HYATT.—*Improvement in Illuminating Vault-Covers*.—Patented March 27, 1855. (Plates, p. 163.)

*a* is the glass, *b* is the hoop of lead, and *c* is the section of the plate into which the glass lenses are inserted.

The inventor says: I do not wish to be understood as making claim broadly to the securing of glass directly within a soft-metal sash, nor to the securing of glass within a metal case, to be in turn secured within a metal socket, as these have been known when applied as specified.

I *claim* the method of securing glasses in the apertures of metal plates or other surfaces by surrounding the glass with a hoop or belt of lead, gutta percha, or other equivalent yielding substance, and forcing the glass so surrounded into the apertures or recess, substantially as and for the purpose specified.

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No. 13,352.—JAMES HARRISON, Jr.—*Improvement in Vault-Covers*.—Patented July 31, 1855. (Plates, p. 163.)

The vault-cover D can be raised into the position represented in the engraving in dotted lines, and articles can be thrown into the vault A underneath the cover.

*Claim.*—Attaching the cover D to the upper part of the opening or passage A of the vault, by means of the jointed arms or rods *d d f f*, arranged as shown, or in an equivalent way, for the purpose set forth.

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No. 13,513.—WM. P. WALTER and JACOB GREEN.—*Improvement in Vault-Lights.*—Patented August 28, 1855. (Plates, p. 163.)

No description required.

The inventors say: We are aware that it is a very common device to avail oneself of the expansive and contracting properties of metal in fitting metal rings tightly around various articles; and we are also aware that it is not a new device to unite silicious compounds to metal by casting the former in a molten state about the latter, as for instance in the manufacture of porcelain or glass door-knobs with metal shanks. We therefore disclaim both of these as broad devices.

But we *claim* the described improvement in the construction of vault-lights, viz: casting the molten glass directly into the metal frame, while in a heated state, said metal frame being grooved internally, so that when it contracts on cooling, and contracting as it does more than the glass, this groove shall bind the glass lens tightly in its place, and so retain it.

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No. 12,676.—SALATHIEL ELLIS.—*Improvement in Framing for Building Concrete Walls.*—Patented April 10, 1855. (Plates, p. 163.)

The object of this improvement is to provide a sectional frame or box to embrace each side of the wall to be built, and so contrived that, as the wall progresses, the lower section may be disconnected and be made the upper part. The boards D, composing the two sides of the frame, are kept at proper distance by clamps *c*, through the upper and lower parts of which pass rods *e* with screws and nuts at their ends. The wall being built up to the top of the upper boards, the lower series of rods *e* are unscrewed and driven out through the wall. The clamps *c* can then be turned round the upper rods *e* so that the lower ends of the clamps come uppermost, still preserving the upper boards D in their position. The lowest board D is then taken away and made the upper board of the frame, and the building of the wall can be continued. The corner-clamps *a b* have a longitudinal slot between the two rods, so that they can be slid upwards as soon as the lower rod is removed.

*Claim.*—The construction of the clamps substantially as before described, so that they can be moved or turned up, as necessity requires, and the combination of these clamps with the rods and boards to form a self-supporting frame, for the uses and purposes above described.

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No. 13,000.—THOMAS ESTLACK.—*Improved Mode of Securing Washboards to Walls.*—Patented June 5, 1855. (Plates, p. 163.)

*Claim.*—Securing washboards E to the flooring A and to slides D, which work in guides C, attached to the walls B in the manner shown, or

in an equivalent way, so that the washboards will, in case of the shrinking or settling of the flooring, fall or settle with it; thereby causing the lower edges of the washboards and flooring to be at all times in contact, as set forth. (See engravings.)

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No. 13,114.—JESSE NORRIS BOLLES, assignor to H. J. OCKERSHAUSEN.—*Improvement in Joints of Pipes for Artesian Wells*.—Patented June 19, 1855. (Plates, p. 163.)

An iron hoop I is heated, and, thus expanded, is placed upon the upper end of a pipe, when another tube of like size is lowered into the band, which, upon cooling, contracts to such a degree as to make a perfectly tight joint. As the ends of the tubes where the hoop goes on have previously been reduced, the exterior surface will be flush.

*Claim.*—The mode of rendering cylinders or tubes flush, or upon a line on their exterior surfaces, for artesian wells, or for other purposes as described, or any other mode, substantially the same, which will produce the same effect.

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## X.—LAND CONVEYANCE.

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No. 12,238.—ALFRED C. GARRATT.—*Improvement in Plugs for Lubricating Axles*.—Patented January 16, 1855. (Plates, p. 164.)

The plug D is made with a chamber *b* within it and a passage *d*. The wheel-grease collects within the chamber, and can easily be removed with the same.

A represents the hub, and C the axle of the wheel.

*Claim.*—The chambered screw-plug open at its lower end, and having a passage made through its side, and applied for removing the accumulated wheel-grease, as described.

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No. 12,347.—GEO. W. GEISENDORFF and JACOB C. GEISENDORFF.—*Improvement in Axle-Box Rollers*.—Patented February 6, 1855. (Plates, p. 164.)

A is the journal of the axle, which is lubricated by roller B; H pinion in the centre of the axle, which revolves the cog-wheel C, and thus the roller B. The object of this improvement is to lubricate when the lubricating material is not yet rendered fluid by the heating of the axle.

*Claim.*—The giving a positive motion or rotation to the lubricating roller by the axle of the car-wheel, in the manner set forth.

No. 13,327.—ALFRED E. SMITH.—*Improvement in Washers for Axles*.—Patented July 24, 1855. (Plates, p. 164.)

Rivets *b* of metal are inserted through the leather washer *a*, to prevent the rapid wearing away of the leather.

*Claim*.—Inserting blocks of metal or other equivalent hard substance in packing washers made of leather or other equivalent flexible and yielding substance, substantially as and for the purpose specified.

No. 12,166.—HENRY MILLER.—*Improvement in Steam Railroad Car Brakes*.—Patented January 2, 1855. (Plates, p. 164.)

The steam-cylinder A and steam-pipe D of each car are so arranged that the condensed water is allowed to run freely and rapidly from the cylinder and pipe, so as to obviate any danger of freezing and choking the apparatus. The tubular flexible casing *f* protects the cylinder-piston and piston-rod from the dust, and the spiral spring *h* keeps the casing distended laterally, so that it cannot be injured by the piston-rod, and assists in carrying the piston back to the bottom of the cylinder after each action.

*Claim*.—1st. The arrangement of the cylinder, the pipe D, and the branch pipe *d* of each car, substantially as described, to wit: the pipe D inclining downwards from each end of the car, and the pipe *d* inclining downwards from the lowest point of the cylinder towards the point of junction with the said pipes, so that the condensed water may all run from the pipes and cylinder and escape therefrom, or be conveyed into a suitable receptacle provided with proper means of escape, as herein set forth.

2d. Encasing the piston-rod with a flexible tube, which is attached at one end to the rod, and at the other to the cylinder-head, and is kept extended so as not to be injured by the working of the rod, by means of a spiral spring surrounding the rod, which said spring assists in returning the piston and freeing the brakes after the steam or compressed air is shut off, substantially as described.

No. 12,245.—LUCIUS PAIGE.—*Improvement in Brake-Blocks for Railroad Cars*.—Patented January 16, 1855. (Plates, p. 164.)

The shoes J may be adjusted as they are worn by unscrewing and thereby loosening the face-plates *v* by which the shoes may be shoved near the wheels B, the face-plates being screwed tightly against the shoes when they are properly adjusted, and thereby firmly securing the shoes in the sockets R.

The inventor says: I do not claim the placing the shoes in sockets or boxes, wherein they remain permanently fixed until worn up so as to be useless.

But I *claim* the improvement of so constructing the shoe J and the socket or bearing thereof, and applying them essentially as described, that the shoe may extend entirely through and out of the socket in opposite directions, and be capable of being moved up to the wheel as

fast as occasion may require, until it, the shoe or rubber, is worn up or rendered unfit for further service, my improvement being one of great practical importance and utility.

No. 12,263.—WENDELL WRIGHT.—*Improvement in Mode of Connecting Pipes for Steam-Brakes*.—Patented January 16, 1855. (Plates, p. 164.)

*Claim*.—Providing each end of the several lengths of pipes for conveying the steam or compressed air under the cars with a valve *k* and an elastic or movable tongue *l*, applied substantially as described, so as to allow the valve to be closed by the pressure of the steam or air when the end of the pipe is disconnected, but to be caused to open the valve by the entrance of the end of the pipe into the mouth-piece of the connecting-tube *D*. (See engraving.)

No. 12,539.—JEHIAL E. BLODGETT.—*Improved Wagon-Brake*.—Patented March 21, 1855. (Plates, p. 164.)

The inventor says: I do not claim the originating of the idea of wagon-brakes, or their invention; claiming only certain improvements in the construction and application of wagon-brakes as described—rendering them perfectly effectual and applicable to all kinds of loading.

I claim the application of wagon-brakes to the forward wheels of wagons by using the hounds *FF*, sway-bar *G*, block-tongue *E*, or other appendages running back from, and firmly attached to, the front axle *B*, as the frame for the support and steadying of such brakes; also the construction of a brake so light and simple as to admit of being supported by such frame, such brake having a main bar *H* of sufficient length to receive both pads *I J*, said main bar turning upon its fastening at or near its centre, with the pad *I* for one wheel firmly attached to one end, and the pad *J* for the other wheel so attached to the other end of the main bar as to turn on such attachment or fastening, such turning pad to be of such form as to bear against its wheel on being turned partly round, and to bear harder on being turned further, and at the same time, by crowding back that end of the main bar to which it is attached, to throw the other end with its pad against the other wheel, as described. (See engraving.)

No. 12,552.—GIDEON HOTCHKISS.—*Improvement in Railroad-Car Brakes*.—Patented March 21, 1855. (Plates, p. 164.)

A bridge *q* is secured to the journal-boxes *j*; a lever *n* has its fulcrum in the piece *w*, which is firmly attached to the bridge *q*; to the short arm of lever *q* is connected the anchor *L*, which carries the brake *L*, and the power for working the brake is applied at the long end *z* of the said lever *n*.

Figure 2 represents only one half of the truck, the other half being exactly alike; *x x* is the centre line.

The inventor says: I do not claim the mere application of the brake to the top of the wheels, nor do I intend to confine my claim to the application of the brake, by the means described, to the top of the wheel only, because by a slight modification and change the principle and means claimed as original may be applied so as to press the brake to other parts of the wheel and accomplish the same object.

But I *claim* the method of operating a railroad-car brake by obtaining the leverage from the axles and boxes by means of the bridges, keys, and clutches, or their equivalent, substantially as set forth.

I have described my improvements as applied to trucks for wide-gauge roads, having axles with inside bearings; but it will be obvious that they are applicable to trucks having axles with outside bearings, and also to cars without trucks; and I therefore claim my improvement when applied to axles with outside or inside bearings, and also to cars without trucks.

No. 12,685.—WILLIAM LOUGHRIDGE.—*Improvement in Graduating the Tension of Car-Brakes*.—Patented April 10, 1855. (Plates, p. 165.)

The brake-chain C is attached at its front end to a barrel D, and passes under the cars around pulleys *c* (attached to the cars) and pulleys *b*, attached to the ends of levers B, and is fastened at its rear end to the hindmost lever B. When the chain is pulled in front, it will lift the ends *b* of the brake-levers which are pivoted at *a*, and thereby press the brakes A against the wheels. Barrel D is hung at one end in a fixed bracket *d*, and at the other in the lower part of lever E, pivoted in *y*. The upper part of lever E connects, by an adjustable link *f*, with arm *g* on rock-shaft F, from which shaft extends also an arm *j*; which arm is so placed as to be struck by the revolution of a pin *h* attached to the loose part G of a clutch G G<sup>1</sup>; G<sup>2</sup> is fast on driving-axle H. The barrel D carries at the end a disc I opposite a disc J on axle H, so that when both discs are brought in contact by the movement of lever E, the barrel winds up the chain in consequence of the friction between the discs. Spring *i*, acting upon lever E, keeps the discs clear of each other, and the brakes clear of the wheels (by the weight of the levers B). When the brakes are to be operated, the clutch G G<sup>1</sup> is thrown in gear by lever K, and G rotates with axle H; the pin *h* strikes and throws back arm *j*, and arm *g*, being thrown forward, acts upon lever E and engages the discs. At this juncture the upper end of lever E is caught by spring-catch *k*. The chain-barrel winds up the chain and actuates the brakes. The clutch being required to operate only during one revolution of the axle H, the lever K can be instantly released to uncouple the clutch by the action of spring *t*; though the clutch might remain in gear without injury, as when the pin *h* has thrown back arm *j* it will merely wipe it slightly in repassing. The chain being sufficiently wound up, the winding up must be stopped to prevent breaking. To this end the discs are disengaged by releasing lever E from catch *k*, to be thrown back by spring *i*. The force applied to the chain is retained by a pawl *l* acting on ratchet-wheel *m* on the chain-barrel. By applying two ratchet-wheels with teeth in

opposite directions, and two pawls, the brake can be operated forwards and backwards. Lever E is liberated from K as follows: Catch *k* works on a fulcrum *n*, its other end having an inclined projection *o*. The upper end of a chain C (which is wound up on barrel D simultaneously with chain C) is attached to a slider M. C<sup>1</sup> draws forward said slider, and its pin *p*, striking projection *o*, liberates lever E from catch *k*. M contains several holes. The insertion of pin *p* in these holes, farther forward or backward, causes it to act on the catch *k*, sooner or later, to disengage the discs, and thus applies the brakes with less or greater force. When the brakes are to be released, the foot-lever *u* is to be depressed, which throws out pawl *l* from the ratchet and liberates the chain-barrel.

The inventor says: I am aware that various arrangements of self-acting brakes have been proposed, in which the power obtained from the locomotive axle, by means of engaging and disengaging mechanism, has been applied throughout a train by the use of a chain, or its equivalent. Such a brake, therefore, I do not claim.

But I *claim* the combination and arrangement of the sliding-plate M, having a series of holes graduated for limiting its play by an adjustable pin; the supplementary chain C<sup>1</sup>, wound upon the chain-barrel D, which receives the chain for actuating the brakes; the lever E, for bringing the said barrel into and out of action; the spring-catch *k*, for holding the said lever E in engagement until tripped by the pin of the aforesaid sliding-plate M, when the lever E is released, and the power is maintained without any further increase. The whole constituting an automatic disengaging apparatus capable of being graduated so as to apply and retain any degree of frictional pressure that may be previously desired, by the simple adjustment of the movable pin in the sliding-plate, substantially as herein described.

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No. 13,038.—JAMES J. McCOMB.—*Improvement in Arrangement of Bumpers for Self-acting Car-Brakes*.—Patented June 12, 1855. (Plates, p. 165.)

The bumper heads C, which apply the momentum of the car to the working of the brakes, are placed one on each side of the coupling, so that said heads shall come against the cars or the platforms P thereof, instead of abutting against each other.

The inventor says: I am aware that self-acting brakes of various forms have been essayed, which were intended to be brought into action by the momentum of the car; but in all those of which I have knowledge, the brake-beams or the bumpers, when used, abut one against the other, thus leaving but one-half of the usual coupling distance available for bringing up the several parts of the brake to a proper bearing and applying the brakes, which is found insufficient; and to couple the cars further apart, to give the necessary distance to properly operate the brakes, has its equally objectionable features.

These, therefore, I do not claim; but I *claim* allowing the brake-beams of each car to abut against the car or platform of the car next to it, by which means I make available the whole play or distance between



the cars in bringing up the brakes, and thus more effectually apply them than heretofore, substantially as described.

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No. 13,108.—PETER TEN EYCK.—*Improved Self-acting Brake for Vehicles*.—Patented June 19, 1855. (Plates, p. 165.)

When the speed of the horses is checked, the shoes will fall by their own gravity and bind between the peripheries of the back wheels and the surface of the ground, and stop the vehicle.

The inventor says: I do not claim a brake formed by placing shoes between the wheels and the surface of the ground, irrespective of the peculiar arrangement, or connexion shown between the shoes and the draught-pole or shafts, for they have been previously used for railroad brakes.

But I *claim* the employment of the shoes F F, attached to the back axle of the vehicle by the jointed arms or levers B D, where said shoes are connected to a sliding draught-pole G, by rods *g g* and chain *h*, said pole G having a spring K attached to it. The above parts being arranged substantially as shown, and for the purposes as set forth.

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No. 13,139.—ELISHA E. RICE.—*Improvement in Railroad-Car Brake*.—Patented June 26, 1855. (Plates, p. 165.)

The shoes are attached to a guide-frame *b*, sliding within a hollow bracket E. Upon each shoe an India-rubber spring *d* is fixed, and upon each spring one end of a beam F rests. This beam is operated upon by the lever G, which is weighted at *i*. The pivot-holes *m* are slightly elongated vertically, so that, when the weighted-lever end has been raised to depress the shoes upon the rails, (this brake is intended to act against the rails instead of against the car-wheels,) and is allowed suddenly to fall again, it may drop some distance before its fulcrum comes to a bearing; in order that, in its descent, the weight may acquire sufficient momentum to produce a jerk that will start the shoe up, in case its guide-frame *b* happens to be bound between the brackets E. One shoe D is flanged, to guide it on the rail while pressed thereon; the other shoe D is plain, that it may be free to move laterally across the rail to accommodate itself to the path of the outer shoe.

*Claim*.—1st. The construction of the brake, with one flanged and one plain shoe, in the manner and for the purposes specified.

2d. The combination of the guide-bracket E extending from the frame of the truck nearly down to the rail, the shoe with its sliding-frame, the spring to allow the shoe to yield, and the beam for pressing down and raising up the shoe; the whole arranged as set forth, so that the spring and shoe are supported near the rail, and the shoe rigidly held from any lateral movement whatever, while it is free to rise and fall.

3d. The weighted drop-lever in combination with the shoes; the same being arranged and operating as set forth.

No. 13,440.—GUSTAVUS ADOLPHUS SOMERBY and CHAS. WM. FOGG.—*Improvement in Railroad-Car Brake*.—Patented August 14, 1855. (Plates, p. 166.)

The journals of the wheel-axes are supported in pendulous bars *b*. Each brake *H* is jointed to one end of lever *I*, while the other end is jointed to the truck frame. Rod *e*, projecting down from lever *K* of another brake *L*, extends through lever *I* and spring *d*, and is supported by the spring, while the latter rests on lever *I*. When the wheels are brought against the brakes by inclining the bars *b* a little from the vertical in a direction towards the brakes, the brakes *H* will be slightly raised by the friction, and also force into action the brakes *L*. When the bars are inclined, the weight of the carriage will act through the bars and force the wheels against the brakes. When it is desired to relieve the wheels from the action of the brakes, hand-lever *u*, attached to shaft *Q*, is moved so as to cause the forward-catch *o* of arm *l* on shaft *k* to be raised upward. As soon as this takes place, the forward draft upon the front draw-bar will so carry the tripping-catch *r* of said draw-bar into action with catch *o*, directly beneath it, as to move the lower arm of said catch forward, and thereby cause the cams *h* of the forward arms *i* (the latter projecting from shaft *K*) to press upon the friction-rollers *g* attached to the hanging bearings *b*, to cause the wheels to be moved away from the brakes.

The inventors say: We do not claim the application of the brake to the wheel, so that either may be moved toward the other while the carriage is in motion, and whether by the momentum of the carriage or by any other power.

But we *claim* applying the wheel-axle to the frame by means of pendulous bars *b b*, arranged substantially as described, in order that the gravity or weight of the carriage, when the latter is at rest, (as well as when it is in motion,) may be employed to press the wheels against the brakes by acting through such bars, when they are inclined from the vertical, and are left free to be moved toward the brakes.

We also claim so combining with either or both the lower brakes *H H*, operated by the wheels as described, one or more other brakes or brake mechanisms *L L*, that the latter may be put in action by the operation of the wheels on the former, as specified.

We also claim, in combination with wheels applied so as to be movable towards and away from their brakes *H H*, as specified, a mechanism substantially as described, whereby the power that produces draught of the carriage or puts it in motion, as described, shall move such wheels away from their brakes, so as to relieve the said brakes from being moved or pressed by their respective wheels.

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No. 13,978.—ROBERT L. CURREY.—*Improvement in Double-acting Steam-Brake*.—Patented December 25, 1855. (Plates, p. 166.)

*C C* are the pistons, which, as soon as steam is supplied between them, move from each other, and, by means of the piston-rods *B B* and connexions, (represented in the engravings,) actuate the breaks *F G*.

As soon as the steam supply is stopped and the steam exhausted, the spiral springs J placed within the cylinder will cause the brakes to recede from the wheels.

The inventor says: I do not claim to have invented a double-acting steam-cylinder, with steam and exhaust at its centre between the pistons.

But I *claim* the employment of such a cylinder in combination with the brakes on both sides of the wheels, in the manner and under the arrangement set forth.

No. 12,490.—EDWARD RICE.—*Improvement in Railroad-Car Coupling*.—Patented March 6, 1855. (Plates, p. 166)

When the cars are brought together, the heads C of the coupling-bars pass into the yielding-mouths D, and within the catches G G, until they strike against the ends of the draught and bumper-bars A, when the catches G G, acted upon by springs K K, will cause said catches to embrace the heads C C between their shoulders and the ends of the bars A (see figures 3 and 4). The catches G G may be rigidly secured in the closed position (see figure 3) by fastening the lever E by a suitable catch. When said lever is not fastened in said position, the outward pressure, exerted upon said catches by the heads of the coupling-bars in passing between them, will cause the embracing-band H to slide backwards upon the inclined planes F F, and allow the catches to open. When it is desired to uncouple a car, the lever E is drawn backward into position figure 5, thereby drawing the mouth D within the catches G G, and forcing them outward, so that the head of the coupling-bar can be drawn freely out from between them; the free play of said head upon the coupling-bar preventing it from catching and holding upon the lower catch when the catches are forced outwards.

*Claim.*—The arrangement of the movable guiding-mouth D, the catches G G, the inclined-planes F F, the embracing-band H, and the lever E with each other, and with the draught-bar A, in such a manner that the coupling-bar B will be self-caught and retained when brought into contact with said parts, and by which it can also be readily liberated when the cars are in motion, substantially as set forth; also, in combination with the spring-catches G G and the movable-mouth D of the coupling-apparatus, the movable-heads C C of the coupling-bar, arranged substantially in the manner and for the purpose set forth.

No. 12,680.—JAMES H. JONES.—*Improvement in Railroad-Car Coupling*.—Patented April 10, 1855. (Plates, p. 167.)

The two parts A A forming the coupling are exactly alike, and they are either permanently attached to their cars or they are connected with them by passing the bolts (by which the cars are drawn) through the holes E E represented in the figures. The springs D serve to guide the jaws C together and to hold them closed, when in position shown in figure 2.

- The inventor says: I am aware that a patent was granted to Joseph D. Alvord on the 18th of September, 1849, for a "car-shackle, in which two horizontally placed hooks, one at each end of the car, are attached to the bunter, so formed and so attached that on bringing the cars together the hooks will fall into sockets into the respective opposite cars." This I do not claim, as my invention is an improvement upon Alvord's; nor do I claim a car-coupling wherein a link or its substitute is used at all; neither do I claim a car-coupling wherein a male and female catch are used, because they require to be changed at times, as two male or two female catches will not form the coupling; but I *claim* a car-coupling without a link, which may be a permanent fixture on the car, and each half so formed that the jaws or hooks will always couple or catch, *the one with the other*, when brought together, regardless of the particular ends of the cars which may be brought together, substantially as described.

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No. 13,264.—AARON G. HECKROTTE.—*Improvement in Railroad-Car Coupling*.—Patented July 17, 1855. (Plates, p. 167.)

This is an improvement on W. C. Bussey's patent, July 17th, 1847. The box A is bolted at F to a draw-bar of ordinary construction, the front of the box being held up by a strap passing under it, leaving it free to be acted upon by the bumper-springs. On bar *f* (which extends from dog-bar D) is movable the slide *e*, secured to bar *f*<sup>1</sup>, so that said bar may assume either of the positions shown in the engravings. The guard bar *f*, by having a cord attached leading to the platform of the car, and so arranged by passing over pulleys as to draw the bar towards the side of the box, serves as a means of uncoupling. When two cars are coupled, the guards *f**f*<sup>1</sup> of the respective boxes A will be on opposite sides, and when in position of fig. 2, the bars *f*<sup>1</sup> will project sufficiently far, each to run under the platform of the other car; so that on the deviation of a car from the track, one of said bars will be drawn outward by a pin beneath the platform, and the tumbler B of one of the couplings released from the dog-bar. P is the coupling bar.

The inventor says: Disclaiming the coupling and uncoupling of cars by eccentric-tumbler, revolving-roller, turning-dog, and coupling-bar, as secured by the patent granted to W. C. Bussey, 17th July, 1847.

*Claim*.—The method described of releasing the tumbler by double-branched sliding-guards *f**f*<sup>1</sup> combined with the dog-bar D, whereby the rigid attachment of the box is avoided, and the same rendered capable of attachment to the ordinary spring-bumpers, as set forth.

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No 13,274.—JNO. RYAN.—*Improvement in Railroad-Car Coupling*.—Patented July 17, 1855. (Plates, p. 167.)

The extreme projecting end of the coupling bar E has a curved plane *k* upon one of its sides and a portion of its top part, and on the opposite side and under part a precisely similar curved plane; so that if the coupling-bar, when the cars are run together to be coupled, should not hang with its points underneath, these planes, or either of

them, striking the rounded or concave face of the buffer-mouth  $D^1$ , will turn them over or around into the right position for coupling. On the backs of the buffer-mouths, and underneath the projections  $c$  thereon, are grooves  $o$  deep enough at their centres to receive the points of the hooks  $a b$ , but which gradually run out at the sides until they entirely disappear. This is for the purpose of self-uncoupling, should one of the cars run off the track.

The inventor says: It is obvious that while the gist of my invention lies in the peculiar forms of the coupling-bar and heads, yet these forms may be varied and still produce the same effect; and I should claim the right of changing the forms of both or either so long as I do not depart from the general character of the invention. I do not claim a gravitating hook, nor do I claim a side-moving hook for self-uncoupling, independent of its particular connexion with the draw-heads.

But I *claim* the surfaces of the hook and inside and outside of the buffer-mouth, so arranged and constructed that the hook, presented in a vertical position, shall be caused to rotate to a horizontal position on entering, and resume its vertical position when driven in to hold the cars, and, by a deviation of the cars to one side, caused to rotate again to a horizontal position, so as to uncouple by said deviation and the leverage between the hook and heads, the buffer-mouth not allowing the hook to pass either way, except when horizontal.

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No. 13,869.—JOSEPH T. ENGLAND.—*Improvement in Railroad-Car Coupling*.—Patented December 4, 1855. (Plates, p. 167.)

$B$  is the coupling-link which, when introduced into the buffer-head, (see position of  $B$ , represented by dotted lines,) will push the ball  $C$  away (see position of  $C$ , represented by dotted lines) so as to let pin  $D$  fall. (See dotted lines.)

*Claim*.—The described coupling, consisting of a ball so arranged in the buffer-head as to support, at its lowest position, the pin, and to be pushed away and allow the pin to fall on the introduction of the link, as set forth.

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No. 12,644.—ALPHEUS D. SMITH.—*Improvement in Railroad-Car Seats*.—Patented April 3, 1855. (Plates, p. 167.)

The engravings fully explain the nature of this improvement.

*Claim*.—The combination of the arms  $c c$ , which project from the back of a car-seat, with the movable bars  $d d$ , which are combined with the car-seat and its arms  $k k$ , or their equivalents, in such a manner that, by the aid of the shoulders  $g g$  on the standards  $p p$ , the back of the seat may be supported in the proper position for day-riding, or be elevated into the proper position for night-riding, and supported in that position substantially as set forth.

No. 13,079.—JNO. H. COCKE.—*Improvement in Railroad-Car Seats*.—Patented June 19, 1855. (Plates, p. 167.)

The inventor says: I do not claim a back capable of turning from one side of a seat to the other; nor a back capable of being placed in an erect or inclined position.

But I *claim* a back possessing all these properties constructed with a rigid arm, the guide-pins of which turn in a curved slot provided with a catch, while the back hinges upon the support for its lower edge, substantially as set forth.

In combination with a reclining reversible back, I claim a concave seat, so that persons occupying the seat will not be liable to slide off, as they would if the seat were flat or convex.

No. 13,464.—EBENEZER JEFFERS.—*Improvement in Railroad-Car Seats*.—Patented August 21, 1855. (Plates, p. 167.)

D is the turning and G the stationary post referred to in the claim; A, the seat.

The operation will be understood from the claim and engravings.

I am aware that a chair-seat has been so combined with its legs or supporting-frame as to be capable of being rotated horizontally. I am also aware that it is not uncommon to apply a table or other article to a stand by such devices as will admit of its being moved in either a horizontal or vertical direction. I therefore do not claim such.

But I *claim* arranging the pedal H, the bolt F, and their locking-recesses *a* together, and in the sector B, and in the turning and stationary posts, as described, and so that, by one single movement of the pedal, the sector and the turning post may be latched or unlatched simultaneously, so as to enable the chair to be operated.

No. 13,471.—ALBERT M. SMITH.—*Improvement in Railroad-Car Seats*.—Patented August 21, 1855. (Plates, p. 168.)

To adjust the back for a night's rest, a cord is attached to the catches, to be operated from the centre. The slots J are rounded off; the catches when in will bear on the edge hard enough to keep the back in place when being changed, but so that, by pushing back hard on the top edge of the low back, (figure 1,) they are thrown back far enough to allow them to pass out and reverse the back. This leaves the back free to adjust itself to the position a person sits in by their pressing against it to rest; but to make it more complete, cords are attached at *d*, and pass over pulleys *n*, and out through the outside of the cushion at E, so that, by taking hold of it to reverse the back, it at the same time pulls the catches *i* in and disconnects them from the supporters B, and allows them to pass with the back turning on the upper catches remaining, *k* connected over to the ends of supporters as at *m*, which they rest against and support, leaving the back reversed, the hollow side in towards the seat.

The inventor says: I do not claim the form or shape of the back or seat part of the car-seat, as they are in common use.

But I *claim* the constructing and arranging of the car-seat so that the whole back, of sufficient width and shape best adapted to support the body of a person for day-riding, if changed either side of the seat, to ride either way, can be reversed; the outside turned inside thereby, and at the same time raised high enough to support the head and body equally well for night-riding, by means of and in combination with the different devices, or their equivalents, necessary for the purposes as described and set forth.

No. 12,371.—GEO. P. KETCHAM.—*Improvement in Mechanism for Retaining Cars upon the Track*.—Patented February 6, 1855. (Plates, p. 168.)

When any one pair of wheels (for instance, the one represented in dotted lines in the engraving) is raised, the arms C are at once thrown downwards and will come in contact with the rails and serve as guides, either ends of the arms being in contact with the rails, according to which pair of wheels is raised.

I *claim* the employment of use of arms C applied to the axles *c d* of the trucks A A<sup>1</sup>, the arms of each truck being supported by the rod D; the above parts being constructed and arranged in the manner and for the purpose as herein shown and described.

No. 12,400.—J. N. WILLIAMS.—*Improvement in Head-Supporters for Railroad-Cars*.—Patented February 13, 1855. (Plates, p. 168.)

The bar *a* having been turned down into a horizontal position, the head-supporters *c c* can be turned round, (they being hinged in *i* to bar *a*, and being sustained by means of the bar *a* resting against either end of slots *j*,) so as to support the heads of persons riding either on seats *d* or on seats *e*.

*Claim*.—The arrangement of head-supporters in railroad-cars in such a manner that each pair of supporters, by reversing their positions, can be adapted equally well to either one of the two seats nearest the said supporters, when the said seat has the rear side of its back turned towards the supporters, substantially as set forth.

Also, the combination of the head supporters *c c*, the plate *b*, the bar *a*, and the cord *f*, or their equivalents, in such a manner that the supporters can be placed in the proper position for supporting the heads of persons riding on either one of the two seats nearest to said supporters, or turned up and secured to the side of a car, substantially as set forth.

No. 12,684.—ROBERT F. R. LEWIS.—*Spiral-Wheel for Replacing Railroad-Cars upon the Track*.—Patented April 10, 1855. (Plates, p. 168.)

Cylinders *d d d* are attached to the common wheels *c c*, their diam-

ters gradually decreasing, so as to give clearance in the centre and on the outsides of the track. The cylinders are provided with screw-thread flanges *b b* of such dimensions as not to jam the rails, and not to prevent a free action when coming in contact with the rails, in case of deflection of the wheels from the track. In such case the screw-thread is to bind against either rail, and to readjust the wheels to the track.

*Claim.*—The application of one or more cast or wrought iron hollow cylinders, wormed, flanged, or screw-threaded on their exterior surfaces, in the manner of a plain screw to rails, trucks, or carriages, in place of or in combination with the common or ordinary flange-wheel, as herein described; and thereby prevent the same from running off or being thrown from the track whilst in forward motion.

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No. 12,772.—WILLIAM APPERLY.—*Ticket Register for Railroad-Cars.*  
—Patented May 1, 1855. (Plates, p. 168.)

When a ticket is wanted, the slide *c d* is drawn out. The projection *d* of the slide pushes the ticket out underneath the small box *E*, and presents it as shown at *B*<sup>1</sup>, fig. 3. The inclined way *E*<sup>1</sup> passing up through a slot in the side, in combination with box *E*, prevents a person from inserting any instrument and drawing out a ticket; it serves also to uplift the front end of the ticket. Before the ticket is out, the projection *K*<sup>1</sup> has turned the wheel *H* one tooth, and also the registering wheel *M*, through intermediate gearing *I J K L*. The index on the circumference of wheel *M* is visible through an opening in the front part of the ticket-box *A*. Spring *D* and follower press down the tickets *B*.

*Claim.*—1st. The within described improvement for distributing and registering railroad and other tickets, consisting in the combination and arrangement of the slide *c d*, spring *D*, and registering device *H I J K L M*, or its equivalent, substantially as set forth.

2d. Providing the extension *E* and inclined way *E*<sup>1</sup>, substantially as and for the purposes set forth.

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No. 13,080.—S. PARK COON.—*Improvement in Apparatus for Replacing Railroad Cars upon the Track.*—Patented June 19, 1855. (Plates, p. 169.)

When the locomotive or car has got off the track, one of the rails is pried up from the track and inverted, and the stocks *B B* fitted upon it. This detached rail *A* is then placed across the track-rails *h*, the rail *A* also projecting underneath the car; the car is then elevated by the ordinary jacks, and the boxes *L* are placed underneath it, the rollers *K* of the boxes being upon rail *A*. Rope *M* is then attached to the outermost box *L* and passed under pulley *D* and through holes *i* in the stocks, and then (by turning crank *J*) the rope is wound around the drum, on axis *F*, thereby drawing the boxes *L* and the car over the



rails *h*. When the car is directly over these rails, it is let down upon them.

*Claim.*—The construction of a windlass, pulley, chain, or rope, and foot-stocks, in such manner as to adapt and attach them to a section or length of railroad rail, substantially as set forth, to form an apparatus that can be used for replacing railroad cars upon the track, and when this duty is done, the parts of which can easily be separated for more convenient transportation, and packed in the tool-box of the tender or other appropriate receptacle.

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No. 13,364.—ELAM C. SALISBURY.—*Improvement in Excluding Dust from Railway Cars.*—Patented July 31, 1855. (Plates, p. 169.)

The space below the car-bodies *a* is enclosed by sheet metal, plank, or canvas sides *b*, stretched and secured to proper frames attached to the cars. Between each two cars the sides *b* are connected by aprons *d*, and opposite the trucks the sides are cut out and the opening covered by a hinged flap *c*.

The inventor says: I do not wish to limit myself to any special mode of enclosing the sides of cars or connecting the sides at the junction of the several cars of a train, nor of enclosing the space between the platforms at the junction of the several cars, as these separately make no part of my invention, and they may be variously modified within the range of my invention.

But I *claim* the method, substantially as specified, of preventing the dust which is agitated and thrown upon the track by the passage of a train from rising up and entering the doors, windows, and other apertures of cars, by enclosing the sides of the train from the bottom of the cars to within a short distance of the track, and closing up the spaces between the platforms of the several cars, substantially as and for the purpose specified.

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No. 13,417.—FORTUNE L. BAILEY.—*Improvement in Apparatus for Replacing Cars.*—Patented August 14, 1855. (Plates, p. 169.)

The flange is small, if any, at the short side of the wheel, and gradually increases towards the upper or long side, and extends near or quite across the edge of the wheel at the long side, forming a sloped or scroll-flange, as at the line at *C*. This wheel is so constructed that the short side is much the heaviest, and when applied to an axle will balance with the short side down, and will remain in that position in readiness for action at any moment; the sloped or scroll-flange should be sufficiently sloping, as at *C*, so that were the car standing still, the weight of the car on the sloped flange would slide the car sideways a sufficient distance, to place the car on the track.

The inventor says: I do not claim the use of cams for lifting the cars merely, for I am aware that has been done.

But I *claim* the arrangement of eccentric-wheels on either side of the rails, the outer ones being slightly smaller than the inner ones, so coun-

terpoised that the smaller portion of said eccentrics shall remain downward when not in use for the purpose of lifting and directing the cars on to the track when they have been thrown off, by rolling upon said eccentric-wheels, substantially as described.

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No. 13,528.—RICHARD RAY.—*Improved Mode of Operating and Dumping Earth-Cars.*—Patented September 4, 1855. (Plates, p. 169.)

The horse walks in one direction until one of the two cars, 1 and 2, is filled with earth drawn to and unloaded on the end of one track, while an empty car on the adjacent track is returned to the opposite end thereof. When the car has been unloaded, the horse returns, thereby returning the unloaded car and drawing up the other car, which has been loaded during the unloading of the first car. The post *o* is so situated between the two tracks that it shall clear the wheels of the cars, but shall trip the lever *m*, closing the bottom *a a* of the cars when said lever strikes the post. As the empty car returns, the two flaps *a*, of which the bottom is composed, strike against the projections *5* on the track, and the bottom is raised until the bolts *f* enter the spring-hasps *g*, when the bottom will be secured and the car will return ready for loading. Figure 2 represents a plan of the car-bottom on an enlarged scale.

I claim the method of operating alternate trucks upon a double railway track by the several devices as described.

I also claim the automatic delivery of the loaded cars, constructed as described by several devices thereon, in combination with a post *o* situated between the tracks.

I claim the device for closing the bottoms *a a* of the cars, as described.

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No. 13,529.—RICHARD RAY.—*Improvement in Operating Dumping-Cars.*—Patented September 4, 1855. (Plates, p. 169.)

A portion of the double track *aa aa* is inclined at the delivery end to cause the return of the unloaded cars by their gravity. The arm *e* of the car (in coming up) is received between the guide bars *k* and *m*. As the car moves upward and the arm is drawn up, the inclination of bar *k* causes the body (which is properly hinged on its trucks) to rise, the bar *m* preventing it from being thrown over too high so as to tilt the body. The guide-bars *k m* are secured to the track by means of framing *f g h i*.

I claim the use of the guide-bars *k* and *m*, when in combination with car *d*, constructed with the arm *e*.

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No. 13,676.—JAMES M. COOK.—*Dust-Deflector for Windows of Railroad Cars.*—Patented October 16, 1855. (Plates, p. 169.)

The deflector A is fastened to an annulus B by a rod E passing diametrically through both, which rod serves as a handle to turn the

deflector at option. The ring C, provided with projections D for holding and guiding the deflector, is to be fastened above or aside of the car window, an opening leading through the side of and into the car corresponding to the size of the ring C. The deflector can always be turned so that the current of air, wherever it may come from, impinges against its outer surface and creates a current through the opening. While the deflector serves to generate the ventilating current leading outwards from the car, it also serves to exclude dust, &c., from entrance into the opening.

The inventor says: I do not claim the application of a curved deflector on the outside of the window opening of a railway carriage, nor making the same to extend under the window and up one side thereof.

But I *claim* the rotary deflector or ventilator, constructed and made to operate substantially in the manner and for the purpose specified.

No. 13,705.—CHAS. MAHON.—*Improvement in Safety Attachment in front of Railroad-Cars*.—Patented October 23, 1855. (Plates, p. 169.)

The object of this improvement is to prevent persons or things from being run over by the wheels of city railroad-cars. A bar *a* is placed in front of each wheel and in the plane of its flange, the lower bent part of the rod fitting freely in the groove through which the flange passes. To the front end of said part of the rod are attached the horizontal and vertical wheels C C, which serve to guide the rod through the groove.

The inventor says: I am aware that rollers have been suggested or described as forming a part of a safety attachment to railroad-carriages in combination with a device which may, perhaps, be considered by the office as an equivalent of the bar, and in manner somewhat similar to my method.

But I *claim* the peculiar and novel combination and arrangement of the vertical and horizontal rollers with the bar, as described and represented.

No. 13,779.—V. P. CORBETT.—*Improved Devices for partially Excluding dust from Railroad Cars*.—Patented November 13, 1855. (Plates, p. 169.)

A is the roof of a car. If the car travels in the direction of arrow *i*, a large quantity of air, dust, &c., is caught by the flaring mouth *b*, and caused to pass into the chamber through valve E, which opens to the pressure of the air. The air, dust, &c., coming in contact with the flaring portion C<sup>1</sup> of pipe C, are deflected downward by the same, as indicated by the arrows, and follow the current of air around pipe C, and escape through the small passage *f* under E<sup>1</sup>, while the greater portion of the air remains in the chamber on account of the escape being so small, and is, by reason of the inlet or supply being so large, compressed and caused to change its course, and rush down through wire-guaze *a* into the car.

*Claim.*—1st. The employment of the valves  $EE^1$  on the ends of the chambers D when said valves are so constructed as to leave small exhaust passages  $ff$ , when closed, between the bottom of the valves and the car, and so arranged that one of them, E for instance, shall be open, while the other  $E^1$  is closed, as the car travels in one direction, and *vice versa* if travelling in an opposite direction, substantially as and for the purposes set forth.

2d. Having the mouth  $C^1$  of the pipe C elevated above the highest point of the escape passages  $ff$ , in combination with the construction, arrangement, and operation of the valves E  $E^1$  and chamber D, substantially as and for the purpose set forth.

No. 12,154.—S. B. BATCHELOR.—*Improvement in Journal-boxes for Carriages.*—Patented January 2, 1855. (Plates, p. 169.)

This improvement consists in constructing a pipe-journal carriage-box, with a united stationary chamber or recess near the inner end of said box, embracing a single flanged shoulder band, permitting the box to rotate on the axle while the shoulder-band is made fast to the axle, so constructed as to prevent the axle from breaking when connected with the journal-box, with a plate of iron placed across the outer end of journal pipe A, with each end projecting being made fast thereto with a tightening screw, for the purpose of securing the journal-pipe in the hub of the wheel. The flanged shoulder-band being placed in the recess in ledge C, this is expanded by heat sufficient to receive the ring R; after cooling the pipe the bead of ring R will be embraced by the corresponding recess  $r$  cut in the ledge, thereby connecting the pipes A and B firmly together, and allowing the shoulder band to rotate inside of pipe A.

*Claim.*—The mode of constructing the stationary inseparably united recess in pipe A, in combination with the single adjustable axle shoulder-band D and sand-band C, with the cap E and screw F, as herein described, or in any other manner substantially the same, by which I am enabled to use any axle of the common manufacture, as herein set forth.

No. 12,218.—SAMUEL T. SANFORD.—*Improved Carriage Cramp.*—Patented January 9, 1855. (Plates, p. 169.)

The engraving plainly illustrates the nature of this improvement.

*Claim.*—Constructing the cramps D with anti-friction rollers  $b$ , said rollers being provided with flanches C, and having such a position that the peripheries of the tires and sides of the felloes of the front wheel will, when the front wheels are cramped, bear against the rollers in the manner as herein shown and described.

No. 12,272.—GEORGE R. COMSTOCK.—*Improvement in Carriages.*—  
Patented January 23, 1855. (Plates, p. 170.)

This arrangement of an elliptic spring is to relieve the jerking motion of the pole as the horses sway side-ways, and the combination of fills with a pole is to ensure the throwing down of the horse whenever the carriage is upset, so that the horses cannot run away.

*Claim.*—The employment of fills F in combination with a pole P, which pole has attached to it an elliptic spring *d*, capable of a motion around the pole, to which spring as well as to the fills the draught animals are to be attached by the harness, substantially as set forth; also, the arrangement of the fills by which the space between them can be enlarged or contracted to adapt it to one or two horses as may be required; the same to be effected by a right-angled elbow *b* on the rear end of each fill, having several bolt-holes through which it can be bolted to the frame-work of the carriage, the fill turning as on a pivot in a loop *a* attached to the outward extremity of the said frame-work, substantially as set forth; also, the combination of the united fills, pole, and elliptic spring with a carriage, for the purpose and in the manner substantially as set forth.

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No. 12,273.—GEORGE R. COMSTOCK.—*Improvement in Carriage-Seats.*—  
Patented January 23, 1855. (Plates, p. 170.)

The seat slides upon rods C C, and can be moved either forward or backward by means of rack-gear G *r* and lever L; thus the seat and load can always be brought directly over the axle of the wheels whenever the ground is rising, level, or descending.

*Claim.*—The method of adjusting the load, carried in two-wheeled vehicles, so as to keep the pressure upon the animal drawing the same equal, or nearly so, whether the carriage be moving upon level or uneven ground, by shifting the seat or upper body backward or forward, using an axis with toothed quadrants operating upon toothed racks attached underneath said seat or body, (or by the use of any mechanical equivalent,) said axis being manœuvred by a lever which passes up through the arm of the seat or upper body, substantially as set forth; the said mechanical apparatus being in combination with the carriage-body and seat.

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No. 13,230.—JOHN SKELLEY.—*Improvement in Carriage Wheels.*—  
Patented January 30, 1855. (Plates, p. 170.)

The object of this invention is to use light or small hubs, and still to obtain a stronger wheel than the ordinary ones now made.

*Claim.*—Constructing the wheel, as shown and described, viz: having a concentric ring or band D constructed of wood, as shown, and secured by metallic bands E E on its sides; said ring or band being at any proper point between the hub A and rim B of the wheel, and having the half spokes F secured between the rim and ring or band, the whole spokes passing through said ring or band, for the purpose as shown and described.

No. 12,430.—JOHN T. OGDEN, assignor to JOHN T. OGDEN and THOS. GODDARD.—*Improvement in Carriage Windows*.—Patented February 20, 1855. (Plates, p. 170.)

Figures 1 and 2 represent inside views of the carriage. The window is held in any desired position by the catch *e*, (catching into one of the notches *l* on the under edge of the window frame B,) which is pivoted at *f*, and is forced up by the spring *g*; this catch, when the window is closed, passes up behind the sash and locks the latter (see figure 1) until the catch is released by depressing knob *h*, when the window is drawn back by the force of spring *F* (see position of *C* represented in dotted lines in figure 1). When and as long as the catch *e* is in any one of the notches *l*, or is in contact with the under edge of the sash B, the bolt *m* is projected into standard *K*, (see figure 2,) and the door is securely bolted. When the sash is in one of the two positions represented in figure 1 (closed or entirely open) the catch *e* rises sufficiently to release the bolt *m* and allow the door to be opened.

*Claim*.—The method, substantially as described, of withdrawing the sash through the rear stile of the door, and retaining the door bolted while the window is partially open, in the manner and for the purpose set forth.

No. 12,751.—WILLIAM G. FOGLESONG, assignor to WM. G. FOGLESONG and BENJAMIN D. ANDERSON.—*Improvement in Folding-tops for Carriages*.—Patented April 17, 1855. (Plates, p. 170.)

The catch-pin *d* of trigger *a*, engaging within a suitable socket in the stem *c*, holds the principal bow *b* and those (*g h*) behind it to their opened or spread position. Spring *j* causes the catch to engage automatically the instant the bow is brought forward. By pressing back the trigger and spring, the catch disengages and the bow collapses.

*Claim*.—The application of a catch *a*, as described, or its equivalent, in front of the hinge which unites the principal bow or slat iron to the stem, for the convenient stretching, &c., of a carriage or buggy-top, as explained.

No. 12,869.—A. H. NILES.—*Improvement in Joint-bodied Carriages*.—Patented May 15, 1855. (Plates, p. 170.)

The improvement consists in constructing a second joint *C* in the carriage-body in addition to the joint between *A* and *B*, which is the subject of J. C. Spencer's letters patent. The half elliptic spring *D* is fitted to the bottom of the carriage-body, and under the said joint *C*, for the purpose of adding to the ease of the carriage and of obviating the danger of its being broken by jolts, &c. The joint being in that part of the body which is most liable to break.

*Claim*.—The application to joint-bodied buggy-wagons and light carriages of the above described additional joint and spring, or any other substantially the same, or which will produce the intended effect.

No. 12,979.—E. D. WILLIAMS.—*Improvement in Vehicles*.—Patented May 29, 1855. (Plates, p. 171.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—The combination of the plate-springs D F and the spiral springs E G, connected or attached to the floor *c* of the body of the vehicle and the perch B, as shown, and using, in connexion with the said springs, the straps H J for the purpose of preventing sudden longitudinal and lateral vibrations, as shown and described.

No. 13,171.—EDWARD HAYES and MORGAN HAYES.—*Improved Apparatus for Setting Bows for Carriage-tops*.—Patented July 3, 1855. (Plates, p. 171.)

The bows A are set in the following manner: They are first centered, and the centre marks placed on the points *m* of the curved strip *g*, the bows resting transversely upon the three strips *ffg*. The bows are placed the proper distance apart and secured down upon the strips by the clamps *n*. The two end bows are secured upon the pieces *h*, as shown in figure 1; and as these pieces are adjustable by means of slots and screws *ij*, it will be seen that the upper part of the carriage-top may be made longer or shorter as desired, because the top of the framing may be increased or diminished in length. The plates *p* are then adjusted so that the pivots or arms *t* will occupy the same position on the end pieces *a* that the arms do on the sides of the seat of the carriage. The joints B are then placed upon the arms *t* and secured thereon by thumb-nuts *u*, and the lower ends of the bows are then fitted to the joints. The bows are then properly set, and may be secured by a strip *a'*. Figure 2 represents only one-half of a cross section, of which *xx* is the centre line.

*Claim*.—Setting or adjusting the bows A for carriage-tops, by means of a framing constructed substantially as herein shown, and provided with clamps *n*, adjustable pieces *h*, and adjustable arms or pivots *t*, as described.

No. 13,311.—MOSES G. HUBBARD.—*Improvement in Carriages*.—Patented July 24, 1855. (Plates, p. 171.)

The object of this improvement is to furnish a connexion between the forward axle *d* and other running gear of a carriage, that shall enable the carriage to turn short, while at the same time the draft is steadier than in the usual constructions, and the carriage can be backed without turning out of position. The two springs *a* (attached to the body behind and to the bolster in front) have the curved slotted piece *b* affixed to their front ends, through which the king-bolt passes. The springs are also jointed to the forward axle by means of bars *c*.

*Claim*.—The cross-bar for attaching the forward axle to the other parts of the running-gear, and bar for the king-bolt, combined and arranged substantially in the manner and for the purpose set forth.

No. 13,428.—B. W. GAY.—*Improved Extension Vehicle*.—Patented August 14, 1855. (Plates, p. 171.)

A front-rocker fastened to reaches B, the latter connected by a cross-piece C, through which the screws D work. The screw-rods have their bearings in the back bed-piece F. The front part of the body slides within and upon the back part. The back seat is made large enough to receive or encase the front one; so that when the screws are turned, the vehicle will be drawn together so as to present the appearance of a single-seated conveyance.

*Claim*.—1st. The screw-perch, constructed and operated in the manner and for the purposes set forth.

2d. The application, in combination with said screw-perch, of the rods, as described.

No. 13,487.—JOHN L. CISCO.—*Improvement in Carriages*.—Patented August 28, 1855. (Plates, p. 171.)

The half-circle plate G is fastened to the front axle in M and F and also to the lower side of the bar D E at G<sup>1</sup>; the bar D E has a slot at its rear end, through which a bolt passes upward from the perch C. The half-circle plate L is fastened to the front axle. To the fore end of bar D E, at D, the head-block is fastened, on which rest the elliptic springs S T, which latter, together with the rear springs S', support the body-frame *b b*. The dotted lines represent the position of parts when the carriage is turning, the above described parts being so arranged as to prevent the wheels from coming into contact with the body. The half-circle G serves as a brace to firmly connect the fulcrum G<sup>1</sup> of the bar D E with the front axle; the half-circle L serves as a guide-rest for motions of the fore end of bar D E.

*Claim*.—The application of the apparatus described, in turning carriages short, consisting of the half-circle bars or plates and sliding-bar attached to the running gear, as described, in connexion with the fifth wheels, by which, in turning short, the body is carried out of the way of the wheels, in manner substantially as described, or any other apparatus substantially the same, producing the same effect.

No. 13,604.—ALONZO WEBSTER.—*Improved Hold-back for Carriages*.—Patented September 25, 1855. (Plates, p. 171.)

This hold-back is attached to the shaft A B of a carriage, A being the forward portion of the shaft. When the hold-back is hitched, the dovetail slide E, with the hold-back strap F attached to it, is shoved into the groove, and is there held from working forward by spring G; but when the horse is unhitched from the whiffle-tree, the spring will give under the forward pressure and let the horse free from the carriage.

*Claim*.—The dovetail groove D, the dovetail slide E, and the spring G; the whole being applied and made to operate substantially in the manner and for the purpose specified.



No. 13,690.—EDWIN WILSON.—*Improved Extension Reach for Carriages*.—Patented October 16, 1855. (Plates, p. 171.)

B represents the back axle. The nature of the improvement will be understood from the claim and engravings.

*Claim*.—Connecting the reach C to the centre piece F of the hounds G by means of the cogged bars H D, slide E, and clasp I, constructed and arranged substantially as shown and described.

No. 13,797.—ANSEL W. PORTER.—*Improvement in mode of hanging Carriage Bodies*. Patented November 13, 1855. (Plates, p. 172.)

The nature of this improvement will be understood from the claim and engravings.

*Claim*.—The free roller connexion between the carriage body and the longitudinal levers, as described, for permitting all shocks to be conveyed through the said levers to the springs without direct action on the body, as set forth.

No. 13,821.—LYMAN JACOBS and C. E. LANDON.—*Improved method of attaching Tops to Seats of Carriages*.—Patented November 20, 1855. (Plates, p. 172.)

The nature of this improvement consists in removing tops of carriages from their seats, without removing the rails, by means of grooves in the frames of the tops, together with the mode of fastening said tops to their seats. When the top is placed upon the seat, the back rail A enters the corresponding groove C C of top, and is therefore concealed. The back rail is fastened at the corners of the seat, supported by the standards B B, which, extending down the inside of the back to the bottom of the seat, turn sufficiently to admit of one or more screws, and they are secured by means of bevelled nut D. H H are irons near the front ends of the sides of the top, which may be fastened on the inside and at the bottom across which they run, then extending downwards at I I, each having a hole through which the bolts E screw into the beveled nuts D. The bolts F screw from the outside of the back through the standards into nuts G, which are fastened on the inside of back under the trimming.

*Claim*.—The described method of concealing the back rails of seats to carriages by means of grooves in the back of the tops. And further, in combination with the grooves, the mode of fastening tops to seats of carriages by means of beveled nuts and bolts, as represented at E E and D D, fig. 1, and F F and G G, fig. 2.

No. 12,504.—ZE. BUTT.—*Improvement in Self-loading Carts*.—Patented March 13, 1855. (Plates, p. 172.)

To load this cart the notch *r* is released from its connexion with the shaft of the windlass K, and the body D of the cart drops to the ground in the position shown in figure 2. Now, as the cart moves forward

the front of the body enters the loosened earth, and, being arrested by the back of the cart, packs up the cart. To elevate the load the back of the cart is tilted downwards, which elevates the point and loosens it from the ground; the windlass K is then turned, and the body is elevated to its former position. To unload the cart it is tilted backwards the same as a common cart.

*Claim.*—The manner described, or any other essentially the same, of constructing, arranging, combining, and operating cart-bodies, so that they can be dropped to or upon the ground to receive the load, be loaded as the cart moves forward, and then elevated and dumped or unloaded, the same as an ordinary cart, substantially as and for the purpose described.

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No. 12,562.—JNO. A. SPRAGUE and BERNARD O'CONNOR.—*Improved Self-loading Cart.*—Patented March 21, 1855. (Plates, p. 172.)

The scoop is of sufficient size to hold one cart-load, and is divided transversely; and the two parts are joined together by hinges, for the purpose of dropping the load through the bottom by its own weight when the hinges are opened. Chains for an extra team to assist in loading are attached to angles J, from which chains run back to the scoop, by which means the draught upon the scoop is brought near to a horizontal line.

The inventors say: We do not claim the combination of a large scoop or scraper, undivided, with the ordinary cart, by suspension, in such a manner that the scoop or scraper may be raised or lowered by a windlass or lever, for this has been done before; neither do we claim dividing the scoop transversely near the middle, as such a device has been known and applied in dredging-machines.

We *claim*, first, the combination of a large divided scoop, constructed as described, with an ordinary cart, in the manner and for the purpose substantially as specified and set forth.

2d. The angle-irons J, on the under side of the cart-shafts near the forward ends, for the purpose specified and described.

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No. 12,804.—JONATHAN WILKINSON.—*Improvement in Self-loading and Unloading Carts.*—Patented May 1, 1855. (Plates, p. 172.)

The levers H I J K being locked down in their detents, the scoops L, boxes and adjustable frame E, all elevated, and the dumping-gates c closed, and the front scoop L having arrived at the place where loading is to commence, the operator detaches lever H from its detent, so as to lower the rear end of the frame E, and then detaches lever I, and lets down the scoop L. After it has taken up its load, the lever is again pressed down and locked, which raises the front of the scoop considerably above the bottom of the box, so as to prevent the contents from falling out. The vehicle still advancing, the operator at the proper moment detaches lever J, letting down second scoop L to take up its load where the first one finished. Then it is raised and locked like the first scoop, and so on until all the scoops are loaded. The rear

end of the frame E is then elevated by depressing lever H, and the vehicle is ready to be removed. When the loads are to be deposited, the lever P is moved back, thereby moving back the spring-detents f, and releasing the arms e which project from the windlasses d, from which windlasses are suspended the dumping-gates c. Thus the gates will be dropped simultaneously, and the contents passing out will be spread nearly uniformly by the forward motion of the vehicle.

*Claim.*—In self-loading and unloading carts, the combination and arrangement in one vehicle of a series of two, three, or more comparatively small scoop-shovels or scrapers and their respective carrying-boxes, so that each of the series can be loaded in succession, independently of the others, while the vehicle is in motion; thus, owing to the shortness from front to rear of the scoops to be forced into the substance with which the cart is to be loaded, and the smallness of the quantity to be taken up by each, avoiding the necessity of employing a powerful team, or of hitching on an extra team while the vehicle is being loaded, as is usually the case in taking up a sufficient load for an ordinary team in a cart having but one large scoop; and so that when the vehicle is removed to the place where the load is to be deposited, all the boxes of the series can be dumped or unloaded simultaneously without stopping the team, and leave the contents spread out in a layer of uniform or nearly uniform depth; the whole being constructed and operated in the manner and for the purposes set forth in the foregoing specification, or in any other manner substantially equivalent thereto.

I also claim the manner of operating the scoops and boxes, by means of levers connected to them by two rods a b, or their equivalents, to each lever; the one b attached to the box, being connected with the lever nearer its fulcrum than the one a attached to the scoop, so that operating the lever will move the scoop through a greater space than it does the box; thus enabling the scoop to be depressed a sufficient distance to take up its portion of the load, and then elevated so as to constitute the front of the carrying-box, while, at the same time, the box is elevated by the rod attached to the lever nearest its fulcrum a sufficient distance to be clear of the surface over which the vehicle is to be conveyed, substantially as herein described and set forth.

Also the manner of attaching the scoop-boxes to the adjustable frame E, and the adjustable frame to the fixed frame A, by means of sliding-bars or rods F, or their mechanical equivalents, so constructed and arranged that the scoops and boxes are capable of a vertical but not of a horizontal motion, except as the whole vehicle is moved; thus enabling the scoops while being loaded to be held firmly at any desired depth against the substance to be taken up by them, substantially as herein specified.

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No. 12,455.—NIRAM HAWLEY.—*Mandrel for Holding Carriage-Hubs, etc.*—Patented February 27, 1855.—(Plates, p. 172.)

Two cones (winged as seen in the engraving or plan) are adjusted to a shaft, one of them immovable, having a circular face C to render

perfect the movement of the set, when the spokes are being driven into the hub; and the other cone is to slide upon the shaft, retaining it in the centre of the box when repairing the hub.

*Claim.*—The application of the cone-shaped cylinders, calculated for every size box or hub, and the face end of the cylinders to make the revolutions of the set invariable.

No. 12,871.—JOHN M. PERKINS.—*Improved Mode of Attaching Hubs to Axles.*—Patented May 15, 1855. (Plates, p. 173.)

To attach the hub to the axle, the cap F is placed against the back end of the hub A, the lips *d* being between the projections *b*. The cap is then turned from left to right, and the lips pass over the outer edges of the projections, and the pin H (which is attached to a spiral spring *c*) passes into hole *e*. When the hub is to be detached, the pin is forced back in the position shown in figure 1, and the cap turned back.

*Claim.*—Attaching hubs to axles by having segment projections *b* attached to the back end of the hub and lips *d* on the inner surface of cap F, which is placed loosely on the arm of the axle; said lips being fitted over the projections by turning the cap, and prevented from moving off of the projections upon the backward movement of the wheel by the pin H, as herein shown and described.

No. 12,946.—JOHN HENDERSON.—*Improvement in Hub and Axle Fastening.*—Patented May 29, 1855. (Plates, p. 173.)

C and D are the upper and lower part of the frustrum-box. The dividing line *a b* of the two parts has a portion *c* (of part C) removed. The cap E fits over the box, effectually excluding dust, &c. The space *c* permits the lower part of the frustrum-box to slide forward sufficiently to connect or disconnect with the axle without removing the other part from the cap.

*Claim.*—The peculiar form of the frustrum-box fastening, operating in the manner and for the purpose herein described.

No. 13,307.—CHAUNCEY H. GUARD, assignor to JOHN A. SCROGGS and CHAUNCEY H. GUARD.—*Machine for Boring and Mortising Hubs.*—Patented July 24, 1855. (Plates, p. 173.)

By depressing the handle of the left-hand lever *p*, (fig. 2,) both the levers *p* will be turned on their fulcra in the supports *q*, thereby bringing the screw-thread segments *o* into contact with the left-handed screw-threads *g*<sup>1</sup> on the bit-holder *m*, and withdrawing the segment *n* from the right-handed screw-threads *k*<sup>1</sup>, and thus crossing the bits which are revolved by cog-gearing *k l*, to move inwards towards the hub A; after the preliminary holes are bored, the bits are withdrawn by elevating the handle of lever *p*, throwing *o* out of gear, and *n* into gear, with screw-threads *k*<sup>1</sup>. The carriage B C is then moved endwise

(by screws *w* and *v*), until the hub is between the chisels *g h*. By depressing the lever *E*, which is affixed to the shaft of cog-wheel *G*, which latter meshes into the teeth of racks *a* and *c*, the chisels will be brought down upon the hub so as to form two mortises.

*Claim.*—The arrangement of the levers *p p*, and the segments *o o* and *n n*, with the right and left screws *g<sup>1</sup>* and *h<sup>1</sup>*, on the periphery of the bit-holders *m m*, in such a manner that a proper position of the said levers and segments will cause the rotary motion of the said holders to move them longitudinally, either inwards or outwards, and which position may be instantly reversed at the pleasure of the person operating the machine, substantially as set forth.

Also, arranging the rack-bars *a c*, and the upper and lower chisels *g h*, in such a manner that the said chisels can be made to simultaneously strike upon opposite sides of the hub placed between them, substantially in the manner and for the purpose set forth.

I also *claim* arranging the rack-bars *a c*, supporting and guiding-bars *H H*, and the regulating-screw *e*, with each other, in such a manner that the chisels *g h* may be made to act in corresponding vertical or oblique directions in forming mortises, substantially in the manner and for the purpose set forth.

No. 13,919.—SHEPHERD W. REED.—*Improvement in Carriage-Hubs.*—Patented December 11, 1855. (Plates, p. 173.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I am aware that a loose disk-brace or flange has been used to support the spokes of a wheel, mounted on and supported between the two flanges of a hub, and having recesses to receive the forked tenon of a spoke, formed by a saw-cut, into which the disk is fitted; such a hub I do not claim, as that has been patented by J. B. Haydon.

But I *claim* the arrangement of the dodged mortises *D*, formed on both sides of the permanent projecting flange or brace *C*, by the triangularly shaped projections *A*, radiating from the tube *B*, for the reception of the spoke-tenon, whereby a double row of spokes may be inserted in the hub, and supported by the flange *C*, in combination with the nuts *H*, to tighten or lock the spokes, and by which a broken or worn out spoke may be removed, and a new one inserted in its place, without untiring the wheel, as described.

No. 13,962.—ELIPHALET S. SCRIPTURE.—*Improvement in Attaching Hubs to Axles.*—Patented December 18, 1855. (Plates, p. 173.)

The wearing-collar *C* will be kept perfectly lubricated at all times by the gasket *G*, and the gasket may be supplied with oil by opening the plate *H*. The hub may be detached from the axle by merely opening said plate *H*, the bolts *J K* not requiring to be drawn from the hub, as in the ordinary hub attachment.

*Claim.*—The plate *H* jointed or formed of two parts, and provided

with flanches F, as shown, in combination with the shield-collar I and gasket G, arranged substantially as shown, and for the purpose specified.

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No. 12,788.—THOMAS FIRTH.—*Improvement in Alloys for Journal-Boxes*.—Patented May 1, 1855.

This improvement is intended to produce a composition metal which shall not cut and melt in the journals of rolling-mills, boxes of car-axles, etc., and which shall be cheaper than the one in common use.

(No illustration.)

*Claim*.—A composition of matter of copper and zinc, in the proportions of seven and one half parts of copper to ninety-two and a half parts of zinc, or any other mixture substantially the same, and which will produce the intended effect.

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No. 13,427.—JOSEPH GARRAIT, Sr.—*Improvement in Alloys for Journal-Boxes*.—Patented August 14, 1855.

*Claim*.—The production of an alloy of a bluish-gray color, which, while it has unsurpassable anti-friction qualities, has also sufficient tenacity to allow of journal-boxes being formed of it that do not require the protection of outer casings of a harder metal; the said alloy being composed of zinc, copper, and antimony, in about the following proportions, viz: Seventeen parts zinc, one part copper, and one part and a half of antimony, or any other mixture substantially the same, and which will produce the same effect.

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No. 13,465.—BENJAMIN F. LAWTON.—*Improvement in Journal-Box Alloys*.—Patented August 21, 1855.

The alloy is composed of wrought-iron, copper, tin, and arsenic in various proportions, according to the degree of hardness, toughness, etc., required—for instance: two parts oxyd of arsenic, three parts tin, five parts iron, (scraps,) fifteen parts copper.

*Claim*.—The aforesaid alloy or box-metal, as a new material for the purpose of forming boxes, journals, axles, and all other rubbing surfaces of the moving parts of machinery, as described.

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No. 13,466.—BENJAMIN F. LAWTON.—*Improvement in Journal-Box Alloys*.—Patented August 21, 1855.

This alloy consists of cast-steel, (scraps,) nickel, copper, and tin, in various proportions—for instance: twenty parts cast-steel, eight parts nickel, twelve parts tin, and sixty parts copper.

*Claim*.—The aforesaid box-metal or alloy, as an improved material for the purposes of forming locomotive crank-boxes, piston-rings, journals, boxes, axles, and other rubbing surfaces of the moving parts of machinery.

No. 12,591.—WARNER GROAT.—*Improvement in Packing Journal Boxes*.—Patented March 27, 1855. (Plates, p. 173.)

B is the journal, C its bearing; *a* the annular packing; D the adjustable tightener brought up against the packing, its flange or shoulder *D'* fitting closely around the lower edge of it; D is provided with two legs *d*, rounded at the lower end. E is the adjusting frame, the ends of which are rounded so as to correspond with the lower end of said legs. By turning the ratchet-wheel in the direction of the arrow, the cam F forces the frame E forward, and drives up the tightener so as to tighten the packing around the axle. When sufficiently tightened, the braces G are slipped in and hold the tightener firmly on the packing.

*Claim*.—The combination and arrangement of the packings, ring, and apparatus for tightening the same within the box, substantially as described, so that the packing in the inner end of the box can be tightened at the end, and the box be kept oil-tight without being pierced with holes, as specified.

No. 13,454.—EDWARD CAMPBELL.—*Improvement in Glass Journal Box*.—Patented August 21, 1855. (Plates, p. 173.)

The back A of the cast-iron box is formed with a hollow recess for the reception of the glass lining *d*.

The inventor says: I do not claim the union of glass and iron, whilst the former is in a plastic state, and the latter at a red heat, by pressure to produce a welding of the two.

But I *claim*, as a new manufacture, a journal-box composed of an iron body and anti-friction lining surface of glass, when the said glass lining is combined with its iron back, as set forth.

No. 13,778.—THOMAS CHOPE.—*Improvement in Attaching Shafts to Axles*.—Patented November 13, 1855. (Plates, p. 174.)

To the axle A there are attached metal pieces D D, the outer ends of which are forked and have small metal cylinders *c* fitted in them, the pivots *d* passing through the cylinders and forks. The shafts B are secured to the axle A by passing the curved ends of the plates C behind the cylinders *c*, the lips *a* fitting in the notches *e* of the cylinders. The lips are kept in the notches, when the shafts are in the usual position, by the concave ends of the pieces D.

The engravings exhibit only one end of the axle A with one shaft, the other end with the other shaft being exactly alike.

*Claim*.—Attaching the shafts B to the front axle A by means of the curved-plates C C attached to the back ends of the shafts, and the cylinder *c* secured in the ends of the projections D, which are attached to the front axle, the cylinders *c* having notches *e* made in their peripheries to receive the lips *a* on the ends of the plates C, substantially as shown and described.

No. 13,804.—ALFRED E. SMITH.—*Improved mode of Securing Shafts to Axles*.—Patented November 13, 1855. (Plates, p. 174.)

*c* are the springs connecting the shafts *a* with the eye-staples *e e*.

The inventor says: I am aware that blocks of India-rubber have been interposed between the ends of carriage shafts or thills and the metal clips attached to the axle to make pressure against the ends of the shafts or thills, with a view to prevent wear, rattling, and accident; but as each block of India-rubber is hollowed out in the front face to fit the rounded end of the shaft or thill, it will seriously impede the up-and-down motion of the horse and the passage of the carriage over irregularities.

I do not, therefore, mean to be understood as making claim to the use of springs or elastic substances at the connexion of the shafts or thill with the axle, to prevent wear, rattling, noise, and accident.

I *claim* connecting the stems of the shafts or thills with the eye-staples by means of a spring or springs acting laterally against the faces of the eye-staples, substantially as and for the purpose specified.

No. 12,513.—WM. H. GUIWITS.—*Improvements in Sleighs*.—Patented March 14, 1855. (Plates, p. 174.)

The cross-bar O serves to stiffen the tongue B, and also to spread the connecting-irons Q, which latter pass through slots R in cross-bar O. This connexion between the tongue and the forward runners D<sup>1</sup> permits great freedom of movement in the latter without any wrenching of the same. The hind runners D are provided with rolling-bolsters M<sup>1</sup> M<sup>2</sup>, between which and fixed bolsters M M the friction-rollers H intervene, the latter being held in their places by the springs H<sup>1</sup> which are fastened to the top of the hind axle-tree C. This arrangement admits of an independent movement of the hind runners without wrenching the sleigh, the axle-tree C being allowed to move slightly in correspondence with the movements of either of the runners D.

*Claim*.—The combination of the sliding bolsters M<sup>1</sup> M<sup>2</sup> and friction rollers H H with the axle-tree C and fixed bolsters M, in the manner and for the purposes set forth.

Also, the slots R in cross-bar O, which permit the movement of the forward runners without any wrenching.

No. 12,850.—DAVID S. BARBER, ALMON THOMPSON, and DE ALGEROY THOMPSON.—*Improvement in Sleighs*.—Patented May 15, 1855. (Plates, p. 174.)

By means of bringing the hand lever into either of positions *n* or *h*, the sleigh will be caused to rest on the ground either with the runners or with the wheels, as apparent from the figure.

*Claim*.—The attachment of wheels to a sleigh to operate as aforesaid, in the manner herein substantially described.



No. 12,406.—LEVI BISSELL.—*Improvement in Metallic Springs.*—Patented February 20, 1855. (Plates, p. 175.)

The weight of the car presses upon the bracket M, and consequently upon strap C D (on which the bracket rests); and as the extremities of the rigid bar A B and of the strap C D are supported by the journals of the axles, the strap tends to recede from the rigid bar, which it can only by increasing its length to the extent of its tensile elasticity.

*Claim.*—The combination of the rigid bar and the thin metallic strap with their extremities rigidly attached together, in the manner and for the purpose substantially as described.

No. 12,475.—HARMON W. BALLARD.—*Improved Arrangement of the Springs on Wagons.*—Patented March 6, 1855. (Plates, p. 175.)

This invention consists in such an arrangement of the springs (see engraving) that they may be affixed to any common box wagon without altering it in any way, and at trifling cost, to make it an easy riding wagon; whilst from the position of the springs they admit of the body coming down to its bearings on the rocker or bolster and axletree, (see dotted lines in fig. 1,) when under heavy burden, without injuring the springs.

The inventor says: I do not claim a spring wagon having solid bearings to take the weight of the load when it becomes too heavy for the spring to bear, as this has been accomplished before in other ways.

But I *claim* the arrangement of the springs, as described, on either or both sides of the rocker, bolster, or axle-tree of a wagon, cart, or other vehicle, as and for the purposes specified.

No. 12,764.—THOMAS MURGATROYD, Jr.—*Improvement in Carriage Springs.*—Patented April 24, 1855; patented in Canada July 21, 1854. (Plates, p. 175.)

Figures 1 and 2 are front views, showing different positions of the springs; figure 3 is a longitudinal vertical section, and figure 4 an inverted plan.

*Claim.*—The employment or use of the springs A A<sup>1</sup> attached to the arms *a* of the axles B B by links *b d*, the links *b* being above and the links *d* below the arms of the axle, the two springs A A<sup>1</sup> being connected by stays or rods C; the springs being also braced to prevent a forward and backward motion of the same, and the axles B being supported or braced by the rod or brace D, as herein shown and described. (See illustration.)

No. 12,849.—JOHN W. ADAMS.—*Improvement in Circular Metallic Plate Springs.*—Patented May 15, 1855. (Plates, p. 175.)

The spring-plates D give the required elasticity, and the concave plates C prevent the spring-plates from yielding beyond a certain distance, so that their elasticity cannot be impaired by over-pressure.

The inventor says: I am aware that conical steel-plate springs, with radiating sections cut out, have been previously used for buffer-springs, and I therefore do not claim these; but I do *claim* the combination and arrangement of one or more flat circular steel plates D, held in place by a central pin B, and allowed to spring a limited space between solid convex and concave metallic plates B<sup>1</sup> and C, in the manner and for the purpose herein described.

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No. 12,890.—M. G. HUBBARD.—*Improvement in Springs for Carriages*.—Patented May 15, 1855. (Plates, p. 175.)

The purpose of this improvement is to dispense with the rocker or centre support on the bottom of the carriage body, which has heretofore been required as a fulcrum. The connexion of the springs *a b*, *a b* by the two clips and bolt *d* gives the required elasticity, and prevents the great strain upon the carriage bottom at the centre when used as a fulcrum for the springs.

*Claim*.—Forming the fulcrum of the springs as above described by connecting them by a clip and bolt at their crossing point, as herein specified.

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No. 12,910.—M. G. HUBBARD.—*Improvement in Carriage Springs*.—Patented May 22, 1855. (Plates, p. 175.)

*a a* are bars, to the ends of which are attached arms *b* and *d*, arms *b* inclining outward and arms *d* inclining inward. The arms *b* are jointed to the hind axle *c*, and the arms *d* to the bolster *e* over the front axle of the carriage. The body of the carriage rests on the rods *a*.

*Claim*.—The employment of a bar extending under the carriage, substantially as herein described, which by its torsion acts as a spring, in the manner and for the purpose set forth.

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No. 13,248.—JAMES F. HEYWARD, assignor to "THE DELAWARE AIR-SPRING MANUFACTURING COMPANY."—*Improvement in Pneumatic Springs*.—Patented July 10, 1855. (Plates, p. 175.)

The space between the dotted line and the India rubber diaphragm L (which latter is supported by a diaphragm G of leather or other flexible inextensible material) contains the fluid which moves upwards, compressing the air in the top of the air-chamber A whenever the flexible bottom is exposed to pressure.

*Claim*.—The method of rendering available the elasticity of aeriform bodies, in the construction of springs, bumpers, &c., by employing a fluid piston to effect their compression, substantially as described.

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No. 13,552.—JOHN J. SPEED, Jr., and JNO. A. BAILEY.—*Improvement in Conical Plate Railroad-Car Springs*.—Patented September 11, 1855. (Plates, p. 175.)

The nature of this invention will be understood from the claim and engravings.

We do not claim merely arranging springs, as such has before been done.

But we *claim*, in metal conical or dish-shaped disk car-springs, arranged in sets or pairs, one above the other, as described, preventing the splitting of the edges of the disks by expansion, and effecting free, unbroken compensation or lateral play, for the radial elongation of the fibres when the spring is exposed to sudden or heavy compression, and insuring equality of elasticity all around, by making the disks with radial corrugations, and arranging them for operation together, substantially as specified.

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No. 13,905. — P. G. GARDINER. — *Improvement in Railroad-Car Springs*.—Patented December 11, 1855. (Plates, p. 175.)

When the spring-plate *a* is allowed to elevate the cap *c*, it assumes an oval shape; and when the cap is forced down so far as to be brought in contact with the base, the spring-plate is brought into a circular form.

*Claim*.—My improved car-spring, composed of a coiled plate-spring, combined with a segmental base *b* and a movable segmental cap *c*, substantially as set forth.

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No. 13,775.—HIRAM ABBOTT.—*Improvement in Upsetting Tire, &c.*—Patented November 13, 1855. (Plates, p. 176.)

The jaws *D D*, when brought to a proper distance from each other, form a slot into which the heated portion of the bar to be upset is placed, and which slot is intended to guide the bar and prevent its bending while subjected to pressure in the direction of its length.

The jaws *B* are then forced out by turning down the eccentric levers *C*, which secures the bar firmly and prevents it from slipping in the jaws. The hand-lever *G* is moved forward, which, by means of cord *c*, moves also the outer end of lever *F F* towards the centre of the machine, causing the pair of jaws *B B* connected to said lever *F F* to approach the other jaws *B* on the other side of the machine; and the bar being firmly secured in each pair of the adjustable jaws *B*, and being controlled by the slot in the middle, the heated and flexible portion of the iron within the slot will be pressed together in the direction of its length and upset, and the length thereof reduced.

The inventor says: I do not claim to have discovered any new method of constructing levers or adjustable jaws, or eccentric or spiral springs or slots.

But I *claim* the arrangement of the parts of my machine, to wit: the bed-plate *A*, the adjustable jaws *B B*, (operated upon by the eccentric levers *C C* and spiral springs,) the eccentric levers *C C*, the elongated jaws *D D*, (which form the slot as described by being inserted or diminished in width through the agency of the eccentric lever *E* and the spiral spring,) the levers *F* and *G*, and the eccentric lever *E*, all as described.

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No. 13,405.—WILLIAM J. TEMPLE.—*Improved Self-Adjusting Tongue-Iron*.—Patented August 7, 1855. (Plates, p. 176.)

By pressing down the back end of lever M it will raise the piece B close up, and when released the weight of B will cause it to fall. The ring S to be attached to the yoke is made just large enough to slide over B when it is drawn close up; so that to attach the yoke it is only necessary to guide the end of the tongue into the ring and back the animals until the ring S slides over B, when it falls, holding it secure.

The inventor says: It may be found best in some cases to leave off the nut on B, and connect the lever M directly to it, by making a hole or holes in its end or near it; and the form and arrangements of the other parts be varied by the circumstances of the particular cases.

Therefore I do not claim the particular form or arrangement, but I *claim* making the part B movable and self-adjusting, in connection with the lever, or any similar means, to raise it, in the manner and for the purposes set forth.

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No. 12,251.—PARLEY HUTCHINS.—*Improved Hand-Truck*.—Patented January 16, 1855. (Plates, p. 176.)

The elevator consists of a strong frame composed of side-pieces C C and cross-pieces C<sup>1</sup> C<sup>1</sup>, and having attached to its front the iron front-piece C<sup>2</sup>. This frame rests on the top of the side-pieces A A, and is furnished with tongues on its sides to fit into grooves *a a* in the said side-pieces A A; so that it is confined to the main portion of the truck, but free to be slid up and down, either by hand or by means of windlass G.

*Claim*.—The elevator, constructed and combined with a hand-truck, substantially as described, whether operated by a windlass or any other device commonly employed for raising weights.

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No. 12,358.—JOHN COCHRANE.—*Improvement in Locomotive Trucks*.—Patented February 6, 1855. (Plates, p. 176.)

Two small brace-cylinders F are placed one immediately beneath each of the two steam-cylinders G on each side of the locomotive. The piston-rods *a* of the cylinders F connect with the truck-frame B B by means of connecting-rods *c*. The piston of each of the cylinders F divides its cylinder into two parts, which parts are connected reversely with the front and back ends of the steam-cylinders G, which operate the truck driving-wheels, by means of the two pipes *m n*. From this disposition and combination of the steam-cylinder G and brace-chamber F, the steam will act in opposite directions on their respective pistons, and thus neutralize any vibratory tendency of the truck from the action of the truck-cylinders.

*Claim*.—The method of neutralizing or preventing the vibratory tendency of the trucks of locomotive engines, caused by the direct action of the forces which operate the truck driving-wheels, by means of the steam or hydraulic brace, substantially as described.

No. 13,323.—JOSEPH THORNTON RUSSELL.—*Improvement in Wagons.*—Patented July 24, 1855. (Plates, p. 176.)

B is part of the bolster; R R the standard receiver, made of iron; and S the standard. These standards can be taken out or changed if desired. When the standards are taken out, the upper part of the standard receivers will serve to keep the wagon-bed in place.

*Claim.*—The construction of the standard receiver described, and the application thereof to wagon-bolsters.

No. 13,503.—JAMES PARSONS.—*Improvement in Wagons.*—Patented August 28, 1855. (Plates, p. 176.)

The nature of this invention will be understood from the claims and engravings.

*Claim.*—1st. The arrangement of the side-pieces or ways A A, resting upon the elevating-blocks *n n*, near the outer end of the bolster C, thereby gaining a greater width between them than is attained in other wagons constructed for similar purposes, thus giving space for loading if raised on a plank or platform, to raise partly above and between them, if necessary to clear the ground in hauling; also, the manner of their connexion between the forward and hind wheels, by passing or sliding through the brace-bands *e e* of the mortises or slots *o o* of the arch.

2d. I claim, in the structure of cast arch, the open mortises or slots, and their uses, that when the arch F F and wrought axletree are combined as represented in figure 2, when supported by the hind wheels, the mortises or slots *o o* will be brought nearly or quite in a horizontal position, for the reception of the side-pieces or ways, as described, thus serving the purposes of coupling the wagon long or short, to suit circumstances.

3d. I also claim the peculiar adaptation of the oblong band *e e* of the braces H H, through which the side-pieces or ways slide, and the hind elevating-blocks pass; and the blocks being held in their proper position by the bands *e e* dropping into the notches *f f* of elevating-blocks D D, thus giving them the sliding-motion upon the side-pieces or ways; and the side-pieces or ways are permitted to slide freely through them and under the blocks; and from thence they form a connexion with the cast arch and wrought axletree, by a stirrup firmly binding them together.

4th. I also claim the manner of so arranging the hind elevating-blocks D D as to give them the sliding principle as described, and the ears *s s* on opposite sides; thus rendering them adjustable in coupling the wagon long or short, by means of the steady or toggle pins *i i i i*; and, again, by their holding in connexion with the braces the arch in a perpendicular position, by the upper part of the casting, or mortises or slots *o o*, being notched into the elevating-blocks as at *c c*, as described and shown.

No. 13,872.—JOSEPH FRANCIS.—*Improvement in Military Wagons.*—Patented December 4, 1855. (Plates, p. 177.)

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I wish to be understood as not claiming the transportation of boats, or segments thereof, in cradles on roads or rail-roads, as that has before been done.

I *claim*, 1st. Constructing the bodies of road-wagons, and like vehicles, of corrugated plate-metal, supported by a bottom frame permanently-attached thereto, so as to serve to support the iron body at all times, and be used as a sled upon which to drag the superstructure, when taken off its wheels, as set forth, and made water-tight for transportation, as specified.

I also claim the mode of attaching and detaching the running-gear, so as not to pass any bolts which are liable to wear and cause a leak through any part of a water-tight body, but simply to connect the same with the frame, as shown at figure 3, by the outside connexions and braces, so as to securely brace the iron body in proper form, and be permanently united therewith.

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No. 12,317.—WASHBURN RACE and BIRDSILL HOLLY.—*Improvement in Carriage-Wheels.*—Patented January 30, 1855. (Plates, p. 177.)

*a* are the mortises for the tenons of the spokes *b*; they terminate in an annular cavity *c* between the inner ends of the mortises and the box *d* of the hub. The tenons of the spokes are compressed in a proper press and immediately inserted into the mortises, where they soon expand so as to form a kind of head between the mortise and hub, so that the tenon will never become loose.

The inventors say: We do not claim a hollow cast-iron or metal hub; but we *claim* the compressed tenon in combination with the annular cavity, in the manner and for the purpose set forth.

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No. 12,572.—GEORGE A. PRENTISS.—*Improvement in the Arrangement of Wheels, Axles, and Friction-Rollers.*—Patented March 21, 1855. (Plates, p. 177.)

A is an ordinary wheel with a cylindrical recess B; C the friction-rollers arranged on rings D around the bearers E attached to the load-axle F; G the securing-axle passing through the load-axle. The securing-axle ties the two wheels together and preserves their parallelism, so that both wheels remain perpendicular to the load-axle, thereby preventing the evils arising from wabbling.

*Claim.*—The combination, substantially in the manner described, of the following elements, viz: a load-axle with a bearer secured thereto, a securing-axle concentric therewith or nearly so, and a ring or series of friction-rollers, the whole being applied to a pair of wheels, substantially in the manner and for the purposes specified.

No. 12,897.—D. W. CLARK and S. H. GRAY.—*Improvement in Carriage-Wheels*.—Patented May 22, 1855. (Plates, p. 177.)

The nature of this improvement is apparent from the figures.

*Claim*.—Constructing the wheel as herein shown and described, viz: having the felloes C constructed of malleable cast-iron in the form herein shown, and having the spokes B fitted in mortises in the hub A and in sockets *a* on the inner surfaces of the felloes. The spokes B having sockets *d* secured on them at about their centres, in which the inner ends of short oblique spokes *e* are fitted; the outer ends of said spokes *e* being fitted within oblique sockets *a* on the inner surfaces of the felloes, as herein shown and described.

No. 13,012.—SYLVANUS PERKINS.—*Improvement in Wagon-Wheels*.—Patented June 5, 1855. (Plates, p. 177.)

The nature of this improvement consists in making wagon-wheels by combining a male and female hub, each armed with spokes, the female hub being movable; the spokes in the female hub to arch or disk towards the point of the male hub, and the spokes of the male hub to arch towards its longer end; also, in arranging the rim with a rib, which serves as a stay for the arches formed by the two sets of spokes; also, in arranging a nut on the point of the male hub, to be used in bracing or to flatten the arches formed by the spokes, and also in arranging a nut on the point of the pipe-box for the purpose of fastening the box in the male hub.

The inventor says: I do not claim the male and female hub, or the rib on the inside of the tire; neither do I claim the hollow spoke, or the nut on the end of the male hub, as being new in themselves.

But I *claim* the combination and arrangement of the female hubs F and I, the spokes C, the rib B, the tire A, the box H, and the nuts E and D, operated as and for the purposes set forth.

No. 13,585.—JNO. M. SIGOURNEY.—*Improvement in Cooling Cast-Iron Car-Wheels*.—Patented September 18, 1855. (Plates, p. 177.)

A sheet-iron ring F of the same width as the chilled portion of the wheel is placed concentrically round the wheel to retain in position the hot sand, which is then drawn from the surface of the casting into the annular space between the ring F and the tread of the wheel.

I *claim* the arrangement of the mould, chill, and ring F, operated in the manner set forth, for equalizing the cooling of the car-wheel.

No. 12,911.—ISAAC KREBS.—*Improvement in Whiffle-trees*.—Patented May 22, 1855. (Plates, p. 178.)

Fig. 2 shows the whiffle-tree, and the position of the rods or bolts *b* and lever C, when the tracing or tugs are attached. The operation of the parts will be easily understood from the figures.

The inventor says: I do not wish to be understood as setting up any claim to the construction of the usual form of a whiffle-tree, nor of any of the devices used separate and apart from each other, being well aware that many devices forming a whiffle-tree for the disengaging of animals from vehicles have been made and used in many forms, with sliding belts, and spiral or helical springs, in combination with separate and distinct levers operated by connecting links or cords, but none of these devices or their combinations, as set forth, do I claim. But to distinguish my said improvements from such as are in general use, I herewith specifically set forth the particular new features of my improvements, and do claim the construction of a whiffle-tree with the *continuous* sliding bolts or trace-fastening rods *b b b b*, communicating *directly* with, and attached to, *one* single and the *same* lever, together with the staple *d*, *one* single flexible spring *e e*, clevis-clips *f f*, in combination, and through all of which are actuated and retained in position, *simultaneously* at one and the same time, the *continuous* sliding bolts *b b*, substantially in the manner shown in figures 1 and 2, and as described, for the purpose set forth.

No. 12,976.—HARVEY WEBSTER and ALONZO WEBSTER.—*Improvement in Whiffle trees*.—Patented May 29, 1855. (Plates, p. 178.)

The engravings represent a section through; and views of two positions of the parts attached to each end of a whiffle-tree. *A* is one end of the whiffle-tree; *B* is a trace; and *g* is a line, by pulling which the latch *f* throws the clamp *b* out, and at the same time the projection *d* throws the trace off the pin *a*.

The inventors say: We do not claim combining with a whiffle-tree a means of suddenly disengaging the traces therefrom while a horse connected to it is running.

Nor do we claim combining with the whiffle-tree a means of disconnecting it from the carriage under like circumstances.

But we claim the arrangement and combination of the movable spring-clamp *b*, its cast-off *d*, its spring-latch *f*, and the stationary pin *a*, or holder, the whole being applied to each end of the whiffle-tree, and made to operate substantially in manner and for the purpose specified.

No. 13,297.—ARCHIBALD BAILEY and DANIEL L. ALLARD.—*Improved Whiffle-tree*.—Patented July 24, 1855. (Plates, p. 178.)

If it becomes desirable to detach the horses, the cord *e* is drawn, which will move the levers *c* and *b* around their fulcra 4 and 6, whereby the projections at the ends of levers *b* will be drawn out of their notches in the cam-hooks *a*, and the cam-hooks will be allowed to turn on their centre pivots, and the cockeyes to pass out of their catches.

The inventors say: We are aware that hooks or catches have been placed in the ends of the levers themselves, but such an arrangement we do not claim.

But we claim, in combination with the compound levers *b c*, arranged and operated as herein described, the pivoted cam-shaped catches or



hooks *a a*, for holding or instantly releasing the cockeyes of the traces; by which arrangement we secure the parts against imperfect action, and are enabled to imbed all the parts within the single-tree, as described.

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No. 13,418.—ORAMEL C. BARNES and O. J. BARNES.—*Improvement in Whiffle-trees*.—Patented August 14, 1855. (Plates, p. 178.)

The nature of this invention consists in providing a whiffle-tree with a turning-hook and slide-catch, with an angle-shaped piece of iron to be driven into the end, forming a wedge to tighten the band, and also to form a groove for the catch to slide in of solid iron, and forming a bearing in which the hook may turn.

The inventors say: We do not claim the turning-hook, nor the sliding catch, but we *claim* the application of the angle-shaped iron forming the solid groove, together with the wedge and bearing for the hook.

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No. 13,712.—GEORGE H. YARD.—*Improvement in Whiffle-trees*.—Patented October 23, 1855. (Plates, p. 178.)

The plate I can be slid back and forth on plate H, the two plates being dovetailed, and plate H being fastened to the end of the whiffle-tree C. When it is to be slid back so as to make room for unhitching the trace, the pin L has to be lifted; and when the plate I is run out so that its point enters the hook G, the pin L drops into the hole in plate H, so as to prevent the plate I from accidentally sliding back.

*Claim*.—The traversing slide I, provided with a point fitted to the hole in the hook G, in combination with a sliding pin L, to fasten it, when the end of the slide is put into the hook, to fasten the end of the trace on to the hook, substantially as described.

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No. 13,744.—GEORGE C. BARNEY.—*Improvement in Whiffle-trees*.—Patented November 6, 1855. (Plates, p. 178.)

This whiffle-tree is made in two parts *a b*, hinged together at D, so that the two parts *a b* will be kept in a straight line by the forward draught of the horse. The hinged part of the whiffle-tree is placed between the upper and lower plates *e e* of a stirrup B, projecting from the back or cross-bar C of the thills.

Provided the breeching of the harness is applied to hold-backs, so made as to enable it to free itself therefrom by forward draught on it, the discharge of the horse from the thills furnished with this whiffle-tree will be achieved by pulling the hinge-pin D upwards and out of the holes of hinge D, and the two parts of the whiffle-tree will be set free from one another and the thills; this whiffle-tree, when discharged from the cross-bar, will not hang on or injure the hind legs of the horse, as it would were it made in one piece.

*Claim*.—Making the whiffle-tree in two parts, in the manner essentially as described, and connecting them together and to the cross-bar

of the shafts, by devices or means substantially as specified, whereby results as explained may be attained.

XI.—HYDRAULICS AND PNEUMATICS.

No. 12,165.—PHILIP W. MACKENZIE.—*Machine for Blowing Blasts, etc.*—Patented January 2, 1855. (Plates, p. 179.)

The drum D is arranged on an axis C, so that it can be revolved thereon. The drum has three longitudinal slots F through its periphery, for the arms G of the blower, which is on an independent axis H, eccentric to the axis C of the drum and inside of it; so that as the drum is revolved, the arms of the blower are projected through said slots, beyond the periphery of the drum, at one side to fill the case B surrounding it, and at the front side are drawn within the periphery of the drum, to prevent any drawback or back-stroke of the blower upon the discharging blast. In order to pack the arms, which are constantly changing the angle of their bearings on the sides of the slot as the drum rotates, the said arms are passed through slotted cylindrical pieces M, which are supported in boxes N, on the inner side of the periphery of the drum.

*Claim.*—The use of the drum and blower having centres eccentric to each other, the said blower being internal of the drum and propelled by it, substantially in mode of construction and for the purposes hereinbefore set forth.

Also, as a part of this invention, the cylindrical adjustable packing for the arms of the blower, in combination with the drum and blower-arms, substantially in mode of construction and operation and for the purposes hereinbefore set forth.

No. 13,743.—THOMAS W. BAKEWELL.—*Method of Heating Air for Blast-Furnaces.*—Patented November 6, 1855. (Plates, p. 179.)

The air (previous to its admission to the furnace) is driven into vessel V by fan F; the exhaust steam enters the same vessel through pipe S, the quantity of steam being regulated by valve v. The heated air passes to the furnace at P. The water of condensation drains off to the force-pump at W.

The inventor says: I do not claim the introduction to furnaces of heated air or steam by itself, either separately or combined.

But I *claim* the heating of air to supply furnaces by bringing the escape steam of an engine into direct and intimate contact therewith in a suitable vessel, separate from the furnace and previously to its admission thereto, substantially in the manner set forth.

No. 12,195.—DAVID N. B. COFFIN, Jr.—*Stop-Cock*.—Patented January 9, 1855. (Plates, p. 179.)

The nature of this improvement is plainly shown in the engravings. *c* represents the elastic valve. The dotted lines represent the valve *a* open.

*Claim*.—The arrangement of a rocking-lever, substantially as herein described, so that if turned either way by the hand, it will open the valve, and be in such a position that when the hand is removed, the valve will be free to close by the pressure of the spring.

Also, the arrangement of the elastic packing, substantially as herein described, so that it will perform the two duties of packing the valve-stem and constantly pressing the valve towards its seat.

No. 13,457.—HENRY ELING.—*Improved Basin Stop-Cock*.—Patented August 21, 1855. (Plates, p. 179.)

This improvement relates to the basin cock, employing a rising and falling screw-valve, and is designed to render it capable of having its valve adjusted in case it should open too soon or not sufficiently wide when the stem of the cock is brought to a proper position over the basin. By simply loosening the nut it may be turned to the right or left, and the valve adjusted to the extent desirable.

The inventor says: I do not claim closing a cock by means of a spring, when said cock is not provided with a screw-valve.

But I *claim* making the cap *C* independent of the nut *D*, so that by simply loosening the nut the cap may be turned and the valve adjusted.

No. 12,284.—ALBERT W. ROBERTS.—*Improvement in Fire-Engines*.—Patented January 23, 1855. (Plates, p. 179.)

The four valves *F F G G* are placed on the centre at the meeting of the two chambers, upon angular inclined valve-beds and openings *S R*. Two of the valves are for injection and two for ejection, operating alternately with the rise and fall of the upper and lower plungers *D D*. When the plungers rise, the upper plunger *D* acts as a suction, causing the upper valve *F* of inlet opening *I* to open for the admission of water to the upper chamber, preparatory to being forced through opposite valve opening *G*; the opposite valve *G* being closed at the same time by the action of the plunger rising. At the same time the action of the rising of the lower plunger closes the lower valve *G* of the inlet opening *I*, and opens the ejecting valve *F* of the outlet opening *J*, and forces the water through the same. When the plungers descend, the lower plunger acts as a suction to the lower valve *G* of the inlet opening *I*, which opens to admit the water into the lower chamber preparatory to ejection by lower opposite valve opening *F* through outlet *J*; the opposite valve *F* being closed at the same time by the simultaneous action of the plunger descending. At the same time the descending of the upper plunger closes the upper valve *F* of the inlet opening *I*, and opens the ejecting valve *G* of the outlet opening *J*,

and forces the water through the same. Thus the alternate rising and falling of the two plungers keep up a continual injection through I, and a continual ejection through J. By the arrangement of the main brake K and counterbrakes L L, the power of the purchase is confined to the centre of the engine, and the brake-arms require a shorter vibration.

The inventor says: I do not claim the brakes and levers; neither do I claim the valves or cylinders.

But I *claim* the arrangement of the valves of pumps for fire-engines and other purposes, in the manner substantially as described. Also, the arrangement of the compound brake and levers, substantially as set forth and described.

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No. 12,441.—AMOS NUDD.—*Fire-Engine*.—Patented February 27, 1855. (Plates, p. 179.)

This invention consists in connecting the brake-lever C with a revolving shaft by means of a connecting-rod *e* and crank *g*, the motion of the shaft being steadied by a fly-wheel K.

The inventor says: I do not claim the application of a fly-wheel to a fire-engine, or to any other machinery; but I claim the method described of easing the motion of the brake-lever, by the attachment of a crank, in the manner set forth.

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No. 12,686.—WILLIAM LOUGHRIDGE.—*Stationary Hydro-Pneumatic Engine for Extinguishing Fires*.—Patented April 10, 1855. (Plates, p. 180.)

Pipes A and B are laid all over the district which is to be supplied with water. Supply-pipe A, being larger than force-pipe B, receives the water from the reservoir, and pipe B receives it from the pipe A, through pipes C, which are arranged at proper intervals to allow free circulation between both pipes. Valves D are opened by the pressure in pipe A, and are closed when the pressure in pipe B becomes greater. At convenient distances there are plugs I, to which the hose can be attached. F is the crank-shaft of the pump, connecting with the engine. From pulley G, on shaft F, is suspended a weight H sufficient to work the pump after the breaking out of a fire until steam can be raised to drive the pump by the engine. The wheel J on shaft F is held by a brake-lever K, to restrain the action of the weight, till an alarm of fire is given. This alarm is given by opening one of the cocks *e*, which are placed at convenient distances and form the connection between pipe B and the signal-pipe S. The water, entering pipe S, rises in pipe O and tank N, and raises float M until it lifts the brake-lever, thereby setting free the weight H and putting the pumps in motion. This gives the necessary alarm.

*Claim*.—1st. The employment, for the purpose of supplying water for fires and ordinary uses at the same time, of the supply and force pipes A B, connected by connecting-pipes C, fitted with valves D; said supply-pipe being connected with the suction *a*, and said force-pipe with the discharge *b* of a force-pump, and the whole operating substantially as set forth.

2d. Though I do not claim the employment of a weight as a motor, irrespective of its particular use in this apparatus, I claim the application of the weight H, or its equivalent, to the driving-shaft F of the pump, in connexion with a brake K, as described, for the purpose of setting the said shaft in motion by the mere act of liberating it from the restraint of the brake, and thereby calling the attention of the engineer, and continuing to drive it until the engineer can get the engine ready and connect it, thereby obviating the necessity of having the engine always connected and in readiness, substantially as herein set forth.

3d. The combination of the signal-pipe S, the tank N, and float M; the signal-pipe being connected either with the supply or force pipe, and the float with the brake-lever, substantially as set forth, for the purpose of enabling a person at any distance from the forcing-pump to set free the brake and start the pump instantaneously, and to give notice to the engineer when to connect the engine, or get in readiness.

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No. 12,912.—A. B. LATTA.—*Improved Carriage for Steam Fire-Engines*.—Patented May 22, 1855. (Plates, p. 180.)

The hind-wheels are placed upon an axle in such a manner that they or the axle may revolve independently of each other, except when coupled together, as hereafter described. The inner ends of the hubs of the wheels are elongated in the form of sleeves Z upon the axle 10, and there are appropriate notches and teeth 2 2 in the inner ends of these sleeves for the purpose of coupling. On each side of the middle of the axle is a coupling-box 3 having each, at its end next the nearest wheel, teeth or notches 4, adapted to coupling with the sleeve of the nearest wheel. These boxes have free end-motion on the axle, but are compelled to revolve with it by means of feathers and grooves. Forks Y serve to operate these coupling-boxes for the purpose of coupling or uncoupling one or both wheels. The steam-cylinder I, for driving the pumps J for throwing water, is placed in a horizontal position outside the frame. The rod 8 of each piston extends out at both ends of the cylinder, one end entering the pump-barrel and carrying the pump-piston, while the other end works through guides K. To this end of the piston-rod is jointed the connecting-rod 12, which operates the crank U at the end of the hind-axle. Connecting-rods R operate the valves by means of eccentrics 9. Upon the front and sides of the carriage, hooks and rests 13 are attached, upon which the suction-hose can rest without being detached from the force-pump.

*Claim.*—The combination of the piston-rod, connecting-rod, and crank, with the shaft, couplings, and driving-wheels, as described, so that the same power that operates the fire-engine may at pleasure operate the driving-wheels for the locomotion of the carriage, or leave them stationary while the engine is performing its duty, all substantially as described.

Also, connecting the forward guide-wheel to the body of the carriage by the large horizontal ring in which it revolves, in combination with the vertical springs and brace-springs for supporting the boxes against

shocks experienced in running over pavements and other rough places, as described. The inventor does not claim either the ring or the springs *separately*, but only the *combination*, in the manner and for the purposes substantially set forth.

Also, combining hooks, rests, or other equivalents, with the body of the carriage, to support the suction-hose, without detaching them from the induction-ports of the pumps, substantially as described.

No. 12,817.—WILLIAM FOWLER.—*Faucet*.—Patented May 8, 1855.  
(Plates, p. 180.)

No description required.

*Claim*.—The construction of the faucet, as herein shown and described, viz: having the lower end of the tube E fitted within a valve-seat D, which seat is screwed into the upper part of a socket C at the upper part of the main pipe or tube B, and adjusting the lower end of the tube E snugly within the valve-seat D, by means of the nut F; the tube E turning within the seat D; the seat D and tube E being provided with openings *c d*, which, when made to coincide with each other by turning the nozzle G and tube E, allow the water to pass up through the nozzle.

No. 12,830.—EZRA RIPLEY.—*Balance-Gate Faucet*.—Patented May 8, 1855. (Plates, p. 180.)

This invention consists in combining a double discharge-gate B B with a double cut-off gate D D, so that when the cut-off gate is closed there is an equal pressure of fluid on each side of the closing surfaces of the gate, thereby preventing all unequal strain on this surface, and tendency to leak from that cause.

*Claim*.—The combination of the duplicate discharge-gates of the faucet-tube, constructed as herein described, with the duplicate discharge cut-off gates; the two parts being combined in the manner as herein shown, for the purpose of forming a balance discharge and cut-off gate for faucets or fluid-gates.

No. 12,950.—JOSEPH HOLLELY.—*Fluid Faucet*.—Patented May 29, 1855. (Plates, p. 180.)

*b* is the packing, which (when the eccentric key is turned into position represented in the engraving) fits tight into its seat. When hot or corrosive fluids are used, vulcanized India-rubber is substituted for the leather, covered with thin sheet-metal to prevent rapid wearing out.

*Claim*.—The eccentric barrel, having an elastic packing on it, acted upon by an eccentric key, in the manner and for the purpose set forth.

Also, facing the rubber packing with metal, in combination with the above, for the purposes specified.

No. 13,047.—EDWARD A. STERRY.—*Faucet*.—Patented June 12, 1855. (Plates, p. 180.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I am aware that valves have been made to rise and fall vertically without being turned upon their axis, and therefore I do not claim this.

But I *claim* the arrangement of the valve *e*, the set-screw *i*, the grooved shank *d*, and the screw enlargement *c* of the spindle of the key, with each other, and with the female screw on the sides of the chamber *a*, and the groove *k*, which acts through the threads of said screw, by which, in a cock of the usual proportions, the valve can be moved up and down without being turned on its axis, substantially as set forth

No. 13,424.—CHARLES CLEVELAND.—*Ventilating Faucet*.—Patented August 14, 1855. (Plates, p. 181.)

The engraving represents the faucet A with the spigot B set for discharging by self-ventilation; and when inserted in an air-tight cask the fluid will issue through orifice *c*, and the air enter through D until the cask is emptied.

*Claim*.—The combination of a venteduct D with a faucet, constructed in any manner substantially the same and for the purpose set forth and described.

No. 13,677.—ALBERT FULLER.—*Improved Faucet*.—Patented October 16, 1855. (Plates, p. 181.)

The number of threads to the inch upon the screw-shaft *l* is the same as that upon the vertical rod *k*, and when the handle *m* is turned, the India-rubber plug *d* will, by means of the eccentrically placed rod *k* acting upon nut *i*, either be drawn away from its seat, so as to let the fluid pass, or be forced upon the seat and prevent the passage of the fluid. As the rod *k*, by means of its screw-thread, travels in the nut *i*, the unerring return of the valve to a horizontal position, and to its seat, is secured by a positive motion, the plug being slightly elevated while being pushed away, and returned exactly to its proper position when drawn back.

*Claim*.—The use of the devices employed for insuring the accurate sealing of the valve when actuated by a crank or other positive motion, the same consisting of the screw-rod *k* travelling in the female screw of the nut or eye formed on the valve-stem, and being cut, constructed, and arranged with regard to the screw-shaft *l*, so as to operate with the same as described, whereby the valve and valve-stem, when the plug is drawn upon its seat, are brought into the exact position required for enabling the valve to find its proper seat.

**No. 13,776.—JOB BROWN.—***Weighing Attachment for Faucets.*—Patented November 13, 1855. (Plates, p. 181.)

The weighing machine is connected to the faucet B for the purpose of drawing liquids, grain, and other articles from vessels in given quantities by weight, the weighing machine operating the faucet so as to cut off the discharge of liquid or other articles from the vessel when the desired quantity has escaped.

The dotted lines represent the position of parts when the weighing apparatus, having received its weight, has descended far enough to move the faucet (by means of the cord) sufficiently to cut off further supply from the vessel.

*Claim.*—Attaching or connecting the frame F to the scale-beam G by means of the pulley *f*, resting upon the short end of the beam, and attaching a cord *g* to the platform *b* of the frame F, and to the gate or spigot of a faucet of the vessel A, the above parts being arranged substantially as shown, for the purpose specified.

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**No. 13,836.—LOUIS FINGER, assignor to LOUIS FINGER and LAZARUS SCHELL.—***Filtering-Faucet.*—Patented November 20, 1855. (Plates, p. 181.)

The parts being arranged as seen in fig. 1, the plug is revolved until opening S in the plug is opposite to the inlet-pipe A, and the water flows through the openings C into the chamber R of the filter; when the parts are in this position, the passages K are covered by disc L, and no water can escape through the drip-pipe *m*. When the faucet is again turned, the water is shut off, and at the same time the brushes are passed over the surface of the filters F, (the filters being so arranged that when the plate is revolved so as to bring the openings M over the filters, the passages K shall be entirely closed,) and the passages K are opened. The sediment which may have been deposited upon the surface of the filter is thus brushed off, and, together with the small quantity of water which remains in the chamber R, passes off through channel *d* and drip-pipe *m*.

*Claim.*—The brush O in combination with the plate L and the passages K, operating in the manner and for the purpose substantially as set forth.

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**No. 13,026.—THOS. C. CLARKE.—***Filter.*—Patented June 12, 1855.—(Plates, p. 181.)

The filter is screwed at A on to the nozzle of a hydrant; B and C are two valves, connected by a rod. The water, when running in, forces B down until it finds an outlet at D. The same pressure closes C, thus preventing the escape of water below, which, filling the cavity K, is forced through the filtering medium E, (the latter being sustained in position by a perforated plate F,) and passes out at H.

*Claim.*—The application of the spring L, so that it shall, in connexion with the pressure of the incoming stream of water, work the up-



per and lower valves, always leaving the lower valve C open for the passage of sediment after the running of the water ceases, thus forming a self-cleansing filter; which cleansing is further promoted by the facility with which the filtering medium itself is changed and renewed by unscrewing the lid in which the filtering medium is secured.

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No. 13,027.—THOS. C. CLARKE.—*Hydrant-Filter*.—Patented June 12, 1855. (Plates, p. 181.)

When the water is stopped off by bringing valve B down upon its seat, the lower valve D is thereby opened, and the sediment is allowed to escape between F and D.

*Claim*.—The combination of the filtering-chamber, the rod C, and the valves B and D, whereby the simple operation of starting the water brings into operation the filter, and the stopping off the water opens the escape for the sediment.

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No. 13,054.—NATHANIEL WATERMAN.—*Portable Floating Filter*.—Patented June 12, 1855. (Plates, p. 181.)

This filter is set into the water which is to be filtered, and by its weight slightly sinks in the water, and thus floats; the water passing from the outside through the gauze *c* and filtering-substance F, and gauze *a*, into the inside A of the filter.

*Claim*.—A portable floating water-filter, substantially as described, wherein the water is filtered from the outside into the inside under a uniform pressure, regardless of the quantity of water in the filter, as set forth.

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No. 13,070.—ORSON C. PHELPS, assignor to ORSON C. PHELPS and JNO. HOLTON.—*Metallic Medium for Filtering*.—Patented June 12, 1855. (Plates, p. 181.)

The wire gauze is first passed through metallic rolls to flatten the wires, by which means the interstices between the wires are to be very much reduced. *d* are discs of such wire gauze placed against shoulder *a* within nozzle A, and secured by a nut *f*.

The inventor says: I do not claim rolling wire gauze by passing it between metallic rolls; neither do I claim the use of wire gauze as a filtering material, when the same is unprepared, in the manner described.

But I *claim* the use of discs of rolled wire gauze prepared and applied to the filter, in the manner substantially as set forth.

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No. 13,628.—GUSTAVUS WEISSENBORN, assignor to EPES W. SARGENT.—*Thermo-udoric Filter*.—Patented October 2, 1855. (Plates, p. 181.)

The steam enters through *b*, the water through *c*; the steam escapes through *c*. The water, in passing along with the steam through the

spiral chamber *f*, becomes thoroughly heated, and commingles with the steam. From the centre of the chamber *f* the water falls on the brush-wood *h*, and trickles down through it, becoming still more heated, and leaving a deposite of the mineral or other matter on the said filtering mass.

The inventor says: I do not make any claim to the well-known result produced by heating water containing impurities or mineral substances to cause a deposite of the same; but I am not aware that impurities or mineral matters have ever before been separated from water by commingling the same with steam in a suitable apparatus to heat the water, and cause a deposite of the foreign matter it contains on twigs, brush-wood, stones, or other suitable substances, in the manner and for the purposes forth.

Therefore I *claim* the method set forth of separating impurities or mineral substances from water, by so introducing steam and water into a suitable apparatus, that they shall commingle, and the water thereby be heated, to fall in a shower upon, or be brought in contact with, pebble-stones, twigs, brush-wood, or other suitable substances or surfaces, whereon said mineral matter or impurities will be deposited, substantially as specified.

**No. 12,421.—Geo. N. TODD.—*Self-regulating Water-Gates.*—Patented February 20, 1855. (Plates, p. 182.)**

The inventor says: I do not claim the employment or use of a float for operating the gate or regulating the amount of water supplied, irrespective of the special mechanism described and used for effecting the above purpose, for floats have been previously used in various ways.

But I *claim* having the float *H* attached by a chain or rod *G* to the outer end of a lever *E*, which passes transversely through a shaft *D* on the upper part of the flume or penstock *B*, the inner or opposite end of said lever *E* being attached to the gate *C* by a chain *F*, by which the gate *C* is raised or lowered to admit the requisite quantity of water to pass through under a variable head, as shown and described. (See engraving.)

**No. 13,319.—E. N. MOORE and ISAAC H. HANTAN.—*Balance Water-Gate.*—Patented July 24, 1855. (Plates, p. 182.)**

The gate is opened by turning shaft *B* until the disks *C* are turned above the openings *D*, which can easily be done, as there will be no friction in consequence of the disks bearing against the projections *a*, because the pressure of the water against one disk will counteract the pressure of the water against the opposite disk.

*Claim.*—Constructing a water-gate, by having two disks or plates *C C*, of proper form, attached to opposite ends of a shaft *B*, which passes transversely through a box *A*; said disks bearing against the projections *a a* on the sides of the box, and over openings *D* in the sides of said box, substantially as shown and described.

No. 12,626.—SMITH GROOM.—*Improved Hose-Coupling*.—Patented April 3, 1855. (Plates, p. 182.)

Figure 1 represents the clutch *d* within the groove. By sliding back the ring *E* against shoulder *h*, the clutches will be allowed to spring back out of the groove. (See figure 2.)

*Claim*.—A hose-coupling composed of two parts, on one of which are spring-clamps or jaws controlled by a friction-ring, and on the other a groove, into which said jaws or clamps take; the whole being so arranged, when united, as to make a tight joint, and yet allow one-half of the coupling to turn on the other half without uncoupling it, as set forth.

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No. 12,831.—ALBERT W. ROBERTS.—*Nozzle for Hose-Pipes*.—Patented May 8, 1855. (Plates, p. 182.)

No description required.

*Claim*.—The combination of two or more movable nozzles or tips *B* of different sizes attached to one pipe *A*, which can be moved by the pipe-holder or his assistant, to change the size of the stream when in motion, for fire-engines or other purposes.

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No. 12,937.—LUCIEN E. HICKS, assignor to HIMSELF and GEORGE N. DAVIS.—*Improvement in Hose-Couplings*.—Patented May 22, 1855. (Plates, p. 182.)

The nature of this improvement is plainly set forth and illustrated in the claims and engravings.

The inventor says: I do not claim a common annulus of leather as a packing for the screw-joint of a hose-coupling; but I do *claim* combining the two parts or halves *A B* of the coupling, by means of a locking or bayonet connexion, or the equivalent therefor, and an elastic tube *F*, possessing sufficient elasticity not only to form, by its expansive power when compressed, a close joint under pressure of a liquid within the hose, as explained, but to maintain the locking-connexions in place when their catch-stud is in its recess, as described.

Also, making the bearing-shoulder *r* conical, or so as to cause the circumference of the tube *F* to be borne against the cylinder-seat *S* by the expansive power of the tube acting against such conical part described; the same being not only to give support to the tube *F*, but to aid in maintaining a close joint against the pressure of the fluid in such tube, as explained.

Also, the shoulder-tube *U*, as combined with the elastic packing-tube *F* and the part *A*, and used substantially in manner and for the purpose of supporting the tube *F* as specified.

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No. 13,112.—ALBERT M. WATERHOUSE.—*Improvement in Hose-Couplings*.—Patented June 19, 1855. (Plates, p. 182.)

The nut being screwed on to the end *B A C* of figure 3, until the slots in the one are made to coincide with the slots in the other, the end

B C D, figure 1, is pressed through the nut and into the end B A C, figure 3, the slots in the nut and the pipe being made wide and deep enough for the ears A, figure 1, to pass easily. When the pipe is thrust in so far that the ears have passed below the nut (see figure 4), the nut is turned around, and is carried, by its screw, down upon end B A C, and, gradually pressing upon the ears, brings the end of its pipe B C D further into the pipe, figure 3, until it is brought home.

The inventor says: I do not claim the pipe, as represented in figure 1, with two or more projections or ears; but I do *claim* the slotted nut, with the female-screw on its inner surface.

I claim the pipe represented in figure 3, with straight or vertical slots, (one or more,) and with a screw on its outer surface.

I also claim the combination of these parts as described, or their equivalents, each with the other and altogether, and all other combinations substantially the same.

No. 12,549.—THOMAS HANSON.—*Valve for Hydraulic Ram*.—Patented March 21, 1855. (Plates, p. 182.)

The flexible tube, when spread out by the preponderance of the pressure in the air-vessel above it, is brought in contact all around with the bore of the tube, thus closing the passage to the driving-chamber, and when contracted by the preponderance of the pressure in the driving-chamber, it opens a direct passage of water from the driving-chamber to the air-vessel.

*Claim*.—The mode, substantially as specified, of forming the connexion between the driving-chamber *c* and air-vessel *e* of water-rams, the tube *h* and flexible cup *δ* placed within it, substantially as and for the purpose specified.

No. 13,324.—THURE EMANUEL SANDGREN.—*Hydro-dynamic Friction Joints*.—Patented July 24, 1855. (Plates, p. 182.)

P is a shaft (the engraving represents it as a propeller shaft) which snugly fits and turns in the hollow cylinder A. The water enters at *a* and passes through channels D to the cavity *e*, between the two rubbing surfaces of A and the hub B of the propeller, for the purpose of preventing heating and friction.

*Claim*.—Forming a hydraulic bearing for a rotating shaft, by means of the water-ducts passing through the cylinder or case in which the shaft rotates, for the purpose of supplying water as a lubricator to the rubbing surfaces, in the manner and for the purpose set forth.

No. 13,303.—W. H. ELLIOT.—*Hydro-Pneumatic Machine for Exhausting and Sealing Vessels*.—Patented July 24, 1855. (Plates, p. 183.)

The nature of this improvement will be understood by reference to letters patent No. 13,291.

*Claim*.—The yielding lining of mouth *b*, the chamber *a*, with its elastic movable portion *e e*, and the lever *d*, with or without the liquid

used for expelling the air from the chamber *a*, or their equivalents, when used in combination, operating in any manner essentially the same as herein described, and for the purposes set forth.

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No. 12,232.—JOHN S. BARDEN.—*Water-Metre*.—Patented January 16, 1855. (Plates, p. 183.)

The cylinder *F* oscillates on journals 1 2; the water enters at *Y*. *H J* are the ingress passages for the water to pass into each end of the cylinder and out alternately through the egress passage *K*, hollow journal 2, and stuffing box *E*. The valve *C* is suspended upon two journals 3 4, whereby the valve adapts itself to the motions of the cylinder. The cylinder heads *M N* are enlarged so as to form reservoirs for the reception of all sediment. The water having filled the cylinder, and the piston *G* reaching the end of its stroke, (see figure 1,) the piston pushes the small piston 7 back sufficient to throw off from catch *O* the latch *q*, when the cylinder, from the weight of the piston, drops, causing the opposite end to rise sufficient to allow the latch *R* to drop of its own gravity into the catch *P*, by which means the position of slide-valve and passages is changed. During the return motion of the piston (now commencing in consequence of the reversed pressure of the water) the water is forced out which has filled the cylinder during the above-described first stroke of the piston, and so forth.

*Claim*.—1st. The two heads being secured, one to each end of the cylinder, by means of bolts, in the form of reservoirs, for the purpose of collecting all sediment that may be drawn into the cylinder through the passages and is not thrown out, or the collection of sediment upon their sides deposited from the water itself, without which the machine would in a short time cease to operate.

2d. The two small pistons, 7 8, with the spiral springs attached, in combination with the guides and catch *O P*, the latches *q R* suspended from above by the hinge-joints *S T*, and the bumper attached, the latches falling of their own gravity.

3d. The construction of the valve *C*, suspended upon the two arms, in connexion with the hanger *L*, the two boxes 5 6, the two spiral springs within the same, and resting upon the top of the said boxes, with the cross-bar 7 and screw *D* for regulating the pressure of the valve; also, in having the cross-bar an elliptic spring resting on the boxes themselves, and finally the entire combination of the above parts for the object described.

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No. 12,887.—JOHN TAGGART, assignor to JOHN TAGGART and JULIUS S. SHALER.—*Fluid Metre*.—Patented May 15, 1855. (Plates, p. 183.)

If water under pressure enters the induction-pipe *e* it will flow into chamber *a*, and press dasher *D* against one side (say, for instance, the right side) of neck *c*. Suppose the valve *h* is closed and *i* open, the water will fill the space in chambers *a* and *b* to the left of dasher *D*,

and will force the lower end of the dasher towards valve *i* till it strikes the valve-arm *r*, thereby closing said valve *i* and simultaneously opening valve *h* (the two valves moving simultaneously in consequence of their outside connexion by a rod *p*). The moment this takes place, the pressure of the water in *a* will throw the dasher from the right to the left side of neck *c*, and the water will fill that part of the chamber *b* which is to the right of the dasher, moving it towards valve *h* till it strikes arm *q* and closes the valve, simultaneously opening valve *i*, and so on.

*Claim.*—The improved automatic fluid-metre, as constructed and made to operate substantially as described; that is to say, of the following elements, or their mechanical equivalents, in combination, viz :

1st. Two chambers *a b*, united by a rectangular or square neck or passage *c*, made of a width greater than the thickness of the vibrating piston or plate extended through the neck.

2d. An induction-pipe or opening *e* in the upper chamber.

3d. Two eduction-passages *k l* and valves *h i* applied to the lower chamber.

4th. A vibrating-plate, dasher, or piston *D*, extending from one chamber *a* into another chamber *b*, as described.

5th. A mechanism applied to the eduction-valves, whereby they may be alternately opened and closed by the vibrating-plate or dasher during its movement, as described.

No. 12,934.—J. S. BARDEN, assignor to OLIVER SNOW and G. B. FARNUM.—*Water-Metre*.—Patented May 22, 1855. (Plates, p. 183.)

The groove *F* around the piston-plate, with the holes *G*, serves to form a passage for a current of water to pass around and press upon the inner surface of the leather piston, thereby effecting a perfect packing. *w w* are the fulcra of the levers *q<sup>1</sup> q<sup>2</sup>*. The operation of the parts is apparent from the engravings. The dotted lines represent the position of the levers when the valve is open.

*Claim.*—1st. A cylinder of any given size with a common plunger within it, open at both ends, and secured within a case divided into two compartments, as above set forth; each compartment with their heads acting as heads to the cylinder, and reservoirs to receive the sediment either drawn in and not thrown out, or that which may be deposited from the water.

2d. The reservoir for the collection of sediment, whether connected with a cylindrical or a rotary water-metre.

3d. The mode of moving and throwing the valve, as above set forth.

4th. The casting or turning of a groove upon the circumference of a piston-plate, and around its entire diameter, with holes drilled from the base of the same through on the inside, in the manner and for the object set forth.

5th. The entire combination, for the object as above stated.

No. 13,198.—JAMES CURTIS and SAMUEL HOARD.—*Water-Metre*.—Patented July 3, 1855. (Plates, p. 163.)

The nature of this improvement will be understood from the claims and engravings.

The inventors say : 1st. Though we do not claim the invention of a metre composed of two cylinders or chambers, of which one is filled while the other is discharged, we *claim* the employment of two chambers, having such communication with each other that the incoming water entering each cylinder or chamber in its turn will expel a volume of air previously contained therein, and drive it into the other cylinder or chamber, and cause the said air to act as a piston to separate from the incoming water, and to discharge through the agency of the pressure thereof, the water in the other cylinder or chamber, substantially as described.

2d. Though we do not claim the invention of a float-valve to shut off the flow of the fluid through a metre, in case of the parts becoming deranged, we claim fitting a float-valve *f* to each end of the pipe *J*, through which the air is transferred from one to the other of the two measuring cylinders or chambers, substantially as described ; or that in whichever cylinder the water should rise above its proper level, by reason of the derangement of the inlet and outlet valves, the pipe *J* will be closed and the flow of water stopped.

No. 13,320.—HENRY R. WORTHINGTON.—*Water-Metre*.—Patented July 24, 1855. (Plates, p. 184.)

A and B are the two cylinders with the pistons  $a^1 a^2$  and  $b^1 b^2$ .  $D^1 D^2$  are the valves, the valve  $D^1$  having two cavities in its face, and  $D^2$  only one. O is the delivery passage into which  $E^2$  and  $f^2$  empty. The valves are operated by the central discs G. The fluid is admitted under pressure through opening K.

*Claim.*—The employment of two cylinders, which may be distinguished as cylinders Nos. 1 and 2, with pistons working in the same, so arranged and combined with regard to each other as that the motion of the piston in cylinder No. 1 shall actuate the supply and delivery valves in cylinder No. 2, while in like manner the motion of the piston in cylinder No. 2 actuates the supply and delivery valve of cylinder No. 1, thus producing a positive and direct motion as set forth.

No. 13,792.—SAMUEL KRAUSER & CHRISTIAN RITTER.—*Water-Metre*.—Patented November 13, 1855. (Plates, p. 184.)

A single drop passing from supply-pipe B, through metre E, into receiver F, indicates a certain larger quantity, for instance a gallon, drawn off at the nozzle of pipe B, (the metre having been previously regulated for the purpose,) and by measuring the quantity in receiver F, the whole quantity of water which has passed through B may be ascertained. The stem *c* passes through the trough E, and has its rear end bent up so as to receive a set-screw *d*, which also passes through

the end *e* of the trough. The front end of said stem has upon it a wedge-shaped plug *f*, which is slightly oblique to the line of the stem; and immediately in rear of the plug is a drip *i*, which follows the plug to drop into and through the funnel *g* into receiver *F*. Spring *h* presses against one side of stem *c* for the purpose of forcing the plug *f* to one side of slot *i* in the plate *j*, which is placed in the front end of the metre *E*. The water which passes from *B* into the metre passes on one side of plug *f*, between it and the slot *i*, and on that side on which spring *h* is placed, said spring being for the purpose of holding the plug away from the opening *i*; *k k* are set-screws for adjusting the plug in a lateral direction, in combination with the spring *h*. Set-screw *d* is for adjusting the plug in a longitudinal direction. The plate *j* on its inner side is formed into tapering grooves, the object of which grooves is to direct any solid matter that may be in the water away from the slot, and thus prevent it from being obstructed.

The inventors say: We are aware that the dividing of the gas which passes through a gas metre into two or more portions, and ascertaining the whole quantity by measuring a part thereof, when under pressure, instead of measuring all the gas which passes through the metre, as heretofore, has been used. This we do not claim.

But we *claim*, 1st, measuring or indicating the passage of a quantity of water through a pipe, by allowing a small graduated portion thereof to escape, and waste into a measuring and retaining receiver, or other vessel, employed for that purpose, by means substantially as described.

We also claim, in combination with the rod *c* and plug *f*, the spring and adjusting screws for the purpose of regulating the passage for the water through and into the metre, as set forth.

We also claim the drip, in rear of the plug, to cause the water from the slot to drop into the funnel, and thence into the receiver, as specified.

We also claim the inclined angular recesses on each side of the slot, on the inner face of the plate *j*, for the purpose of carrying away from the slot any impurity or solid matter in the water, as described.

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No. 12,199.—GILBERT B. FARNAM.—*Forcing-Pump*.—Patented January 9, 1855. (Plates, p. 184.)

By means of this arrangement ready access can be had to the valves for repairs, whilst at the same time direct passages are provided for the water to pass from the induction to and through the eduction valves, instead of the circuitous passages found in horizontal pumps as heretofore constructed. The column of water set in motion is not all suddenly arrested by the change of motion of the piston, for the reason that the column may continue to move directly through the water-box and valves, until arrested by its own weight, notwithstanding the change of motion of the piston. In this pump, therefore, the piston can be worked at a high velocity. Before the piston is inserted in the cylinder, the ring *t* is first put into the enlarged part of the cylinder; and as this makes a continuation of the bore of it, and the outer end of the bore of



the ring is trumpet-shaped, the piston with its leather packing-rings can be inserted without injury to the leather rings.

*Claim.*—Arranging the two sets of induction and eduction valves *ff* and *ll* of a double-acting horizontal pump on two plates *e* and *k*, secured one to the top and the other to the bottom of a water-box *a a*, divided by a vertical partition *d* into two compartments *b* and *c*, one end of the horizontal cylinder *n* being secured to one side of the said water-box, opposite one of the compartments *b*, when this is combined with the connexion of the other compartment *c* of the said water-box with the opposite end of the cylinder, by means of a side-pipe *p q*, substantially as and for the purpose specified; also, making the outer end of the bore of the cylinder of an enlarged diameter, with a ring *t* fitted thereto, having a bore of the same diameter as the cylinder and flaring or trumpet-formed *u u* at the other end, substantially as specified, in combination with and as a means of inserting the piston made with conical leather packing-rings *x x*, substantially as specified.

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No. 12,296.—EDMUND MORRIS.—*Improvement in Buckets for Chain-Pumps.*—Patented January 23, 1855. (Plates, p. 184.)

The gum-ring is made so small that when placed on the cone, it will remain, by its own contractile power, at the top or smaller end of the cone; but when the bucket is in use in a pump-tube (the chain being riveted to the ends E and F), the friction forces the ring down towards the base of the cone enough to make a water-tight fit.

*Claim.*—The combination and arrangement of the gum-ring A with the cone B, substantially as described, for the purpose set forth.

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No. 12,312.—GEORGE FOWLER.—*Double-Acting Force-Pump.*—Patented January 30, 1855. (Plates, p. 185.)

*Claim.*—The combination of the solid piston with the cylinder and reservoir, when the piston is inserted from the lower end of the cylinder and worked by a parallel side-rod or shaft outside of the cylinder, whether for single or double-acting pumps, so as to constitute it an efficient lifting-pump, without suction-valves; and the whole constructed, combined, and arranged substantially as set forth. (See engraving.)

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No. 12,326.—HENRY ROGERS.—*Improved Force-Pump.*—Patented January 30, 1855. (Plates, p. 185.)

When the bucket *c* is let down into the water, the water fills the bucket through the bottom-valve *g*. In raising the bucket, by means of windlass *w*, the valve *g* is closed, and (as the piston *a* is stationary) the water is forced up through delivery-pipe *b*.

*Claim.*—The combination of the suspended valve-bucket *c*, with the stationary hollow plunger *a*, or of the suspended hollow plunger with the stationary valve-bucket, when so constructed, arranged, and operated as to serve, automatically, to clear the delivery-pipe *b* of water, as and for the purposes set forth.

No. 12,342.—W. C. BURNHAM and J. S. BURNHAM.—*Improvements in Double-Acting Force-Pump*.—Patented February 6, 1855. (Plates, p. 185.)

The operation of this pump is as follows: Suppose the piston G to be at the lower end of the cylinder E, and the pump now first operated. Upon drawing the piston upward the valve *e* will open and the water will flow into the chamber *a* through the suction-pipe B, and into the lower end of cylinder E through valve *e*. (See figures 1 and 3.) The valve *f* at the lower end of the passage F will be kept closed by the pressure of the air against it as the piston rises. When the piston is moved downward, the water that entered at the lower end of the cylinder is forced through the opening *l* into the compartment *d*, the valve *e* being closed by the pressure of the water; and the water in the compartment *d* being under the pressure of the piston G will raise the valve *g* and flow into the chamber *c* and out of the pipe C, (see arrows 2, figure 4,) the chamber *c* being open at the top, as shown in figure 3. Upon the downward motion of the piston G, a suction is formed in the passage F, and the water rushes from the compartment *a* through the valve *f*, up the passage F into the upper part of the cylinder E through the opening *k* (see arrows 3, figure 4); and when the piston is moved upward, this water that entered into the cylinder through the opening *k* is forced down the passage F through the opening *m* into the compartment *b*, the water in the compartment *b* raising the valve *h* and passing into the compartment *c* and out of the pipe C. Thus a continuous stream is thrown by the pump.

*Claim*.—The general construction of the pump, as herein shown and described, viz: having the casing D, cylinder E, and passage F, arranged as shown, and cast in one piece, and secured upon the upper part of a base or circular chamber A, having compartments *a*, *b*, *c*, *d* within it, and valves *e*, *f*, *g*, *h* upon its top plate, arranged and communicating with the several passages, as shown and described, and for the purpose as set forth.

No. 12,350.—BIRDSILL HOLLY.—*Improvement in Elliptical Rotary Pumps*.—Patented February 6, 1855. (Plates, p. 185.)

The large cogs *a* fit (as the pistons P P<sup>1</sup> revolve) into the corresponding recesses *b* in the line of their conjugate diameters. By revolving one of the pistons, the other will be carried round by means of the smaller cogs *e*. These pistons revolving in the air-tight shell *d* are continually producing variable chambers, and thus draw in the water through induction-pipe *f*, and force it out through eduction-pipe *f*<sup>1</sup>. The small grooves on the periphery of the cogs *a* become filled with water, the centrifugal action of which becomes opposed to the resistance of the water to be forced, and serves thus as a tight packing.

*Claim*.—The corrugated or grooved pistons or cogs, in the manner and for the purposes specified.

No. 12,413.—GUSTAVUS HAMMER.—*Improvement in Pump-Valves.*—  
Patented February 20, 1855. (Plates, p. 185.)

This improvement is to be a remedy for the faults of having the valves attached to one and the same stem. The inducing valves 1 1 of one end of the pump are attached to the educting-valve 2 of the opposite end of the pump (see figure 2) in such manner that the instant the inducing-valve *i* of one end of the pump closes, (by closing the open space 8,) it will close the educting-valve 2 of the opposite end against the educting opening in the vertical wall 10 (represented in figure 1, in dotted sectional lines). The pivot 5 is the centre of motion, common to both the valve 2 and valves 1 1.

By having each set of valves so attached, all of them can be closed at one and the same time, and thereby retain the water that has been drawn in the pump when its operation is stopped, which dispenses with the necessity of using the ordinary check-valve.

*Claim.*—The manner described of connecting the inducing-valves 2 of one end of a double or single acting pump with the educting-valves 1 1 at its opposite end, on or to a separate stem or spindle, so that each set of valves may have an independent movement of the other in its operation, substantially for the purposes set forth.

Also, the combination of the two educting-valves 1 1 with the inducing-valve 2, in order to give each opening an equal area with a given movement of the valves, as set forth.

No. 12,517.—HIRAM MOORE.—*Method of Operating Pumps by Wind.*—  
Patented March 14, 1855. (Plates, p. 186.)

A plate J is attached to the shaft F, which is set in motion (by means of gearing I D) from the windmill-shaft A. A spiral-rib K extends backwards from the said plate J. This rib, as it revolves together with the plate and shaft, will catch over pin L on pump-rod M and draw it down to the end of the spiral rib at *b*, which will take about one half a revolution of the shaft. As soon as the end *b* of the rib passes the pin L, the pump-rod will be drawn up to its former position by the force of the spring N, which bears against the extension P of the pump-rod. Thus the water will be raised. As the velocity with which the water is raised corresponds to the force of the spring, and will consequently always be the same, an increase in the velocity of the shaft F will cause the rib to catch the pin before it has completed its upward motion. Thus an increase in the velocity of the windmill will allow a smaller quantity of water only to be raised, and this quantity will be in proportion to the increase in the velocity of the windmill.

*Claim.*—The combination of a compensating cam and spring, or the equivalent thereof, for operating a pump driven by a windmill, substantially in the manner and for the purpose set forth.

No. 12,542.—JNO. P. COWING.—*Device for Air-Chamber of Pumps.*—Patented March 21, 1855. (Plates, p. 186.)

By turning valve J so as to shut the vessel F air-tight, (see fig. 1,) or by turning the valve so as to effect a communication *b b* with the air outside, (see fig. 2,) the pump may be either used for merely drawing water or as a force-pump for discharging the water with great force.

A is the pump-cylinder, and R the pump-rod.

*Claim*—The combination and arrangement with the air-chamber or vessel F of the pump, having its delivery-spout or outlet below, or at or near the bottom of said chamber, substantially as shown and described; of a hand air-valve or perforated nut J, at or near the top of the air-vessel, for the conversion by hand with facility and despatch of the close air-vessel into an open water reservoir, or *vice versa*, above the discharge-outlet or spout of the pump; and whereby the uses of the common well or lift-pump may be varied with despatch, and its conveniences augmented, as set forth.

No. 12,544.—CHAS. G. CUSTIS.—*Pump.*—Patented March 21, 1855. (Plates, p. 186.)

A is the pump-barrel; C the induction-chamber. The leading-chambers D and E respectively communicate with the valve-chambers F and G by means of passages *h i*. Chamber C communicates with both F and G by means of valves *kl* (opening upwards). Valves *m n* lead from chamber H into chambers D E. K discharge-pipe. B induction-pipe. The upper end of the pump-barrel communicates with chamber D through L; the lower end of the pump-barrel has pipe M leading out of it and into chamber E. A single cap-plate N covers the valve-chambers and the top of the pump-barrel.

The inventor says: I am aware that induction and eduction valve-chambers and valves with their case have been arranged on the side of a horizontal pump-barrel, midway between its two ends; the barrel being made to communicate with the valve-case by two pipes leading from the said case respectively into the two ends of such barrel.

I am also aware that valves and their chambers have been placed at the lower end of a vertical pump-barrel, and a leading-pipe used to connect the valve-case with the upper part of the pump-barrel; the first of these arrangements only requires the removal of a cover-plate to obtain access to the valves, (such cover-plate having no connexion with, or forming part of, the cover-plate of the end of the barrel,) while the second of these arrangements rendered it necessary to raise from the valve-case the whole pump-barrel and cap-plate of the valve-case in order to obtain access to the valves. I therefore do not claim either of such arrangements; my invention having reference to an upright pump-barrel.

I *claim* arranging the eduction and induction valve-chambers concentrically around the upper end of the pump-barrel, and with respect to one another, substantially as specified; they being provided with valves

and passages connecting them together, and with the two ends of the pump-barrel, as described; the said arrangement admitting one cap-plate to be employed both for the valve-cases and the pump-barrel, and at the upper end of said pump-barrel, as explained.

No. 12,566.—WILLIAM T. VOSE.—*Pumps*.—Patented March 21, 1855. (Plates, p. 186.)

This invention consists in an arrangement where two valves in or on the pistons are all that is necessary to the elevation of water by means of two pump-barrels. D is the induction, E the eduction pipe. The operation of the pump will be understood from the engravings.

*Claim*.—Connecting the two pump-barrels at the adjacent ends, as described, in combination with not only arranging the valves of their respective pistons, so that one of them shall be applied to one or the upper side of one piston, while the other is applied to the opposite or lower side of the other piston, as stated; but applying the eduction and induction pipes respectively to the disconnected ends of the barrels, substantially as specified.

No. 12,579.—ABEL BARKER.—*Rotary Pump*.—Patented March 27, 1855. (Plates, p. 186.)

This improvement is intended to prevent the water from being broken and beat up into foam by the rapid movement of the buckets, as would be the case if the water passed from the induction aperture directly to the buckets. The water in this pump passes in an unbroken current from the induction, opening directly into the mouth of channel *k*, and follows after each bucket until the said current is struck out and carried forwards by the next bucket in succession, discharging at aperture *j*.

*Claim*.—Causing the buckets *c c c*, during a portion of their revolution, to pass through an enclosed channel *k*, and during the remainder of their revolution to pass through the chamber which communicates directly with the central induction opening *f*, substantially in the manner and for the purpose set forth.

No. 12,601.—THOMAS LING.—*Self-Adjustable or Anchoring Pump*.—Patented March 27, 1855. (Plates, p. 186.)

The end of pipe E is so constructed as to discharge the water downwards, and it has the plate F fastened to it so as to traverse with it, and cover the opening D, when E is raised by means of pump-lever G. The plate F also serves to guide and steady the pipe E.

*Claim*.—1st. Connecting the piston or stationary part P to a wedge or anchor W, by a flexible joint Y, or its equivalent, so as to allow the anchor to adapt itself to the bottom of the well without cramping the other parts, substantially as described.

2d. Connecting the anchor to the cylinder, or moving parts, by means

of the projections V and slotted arms *w*, or their equivalents, so as to draw the anchor from the well by means of the pipe and cylinder, or moving parts, substantially as described.

3d. The devices, substantially such as are described, or their equivalents, for guiding and steadying the upper end of the pipe, and discharging the water downwards into a box having an opening in the side, in which the pipe traverses, closed below the pipe by the plate F, or its equivalent.

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No. 12,617.—ABEL BARKER.—*Method of Lubricating Pistons of Air-Pumps*.—Patented April 3, 1855. (Plates, p. 186.)

An opening is made in the annular part of piston *s*, and it is covered by the inwardly opening valve *t*. As soon as the oil that has been introduced above the piston has found its way to the bottom of the cylinder, it will be perceived that it will be at once forced up above the cylinder again through the aperture covered by valve *t*.

*Claim*.—The transference of the lubricating oil from the bottom of the engine-cylinder to the upper side of the piston thereof, for the purpose of insuring the proper lubrication of said piston, substantially as set forth.

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No. 12,625.—ROBT. B. GORSUCH.—*Direct-acting Hydraulic Steam-Pumps*.—Patented April 3, 1855. (Plates, p. 187.)

When the plunger M is nearly down, (see figure,) the upper end of it will pass the holes *b* in the ring-packing D<sup>1</sup>, and the water under pressure (which, by means of a pipe, is in constant communication with the space around said packing) will rush through the holes *b* over the plunger and into the suction-end of the pump-cylinder, and will not only prevent or destroy the vacuum, but will also act suddenly upon the forcing-end of the plunger with a power about equal to that upon the forcing-end of the plunger. This water pressure, acting conjointly with the steam at the moment the engine is taxed to move the steam-valves, in addition to its regular load, enables it, by means of arm R on the piston-rod C, to throw the steam-valve D with unerring precision across the openings; and at the same time the water from the forcing-end of the pump-chamber having been driven through the force-valves *a*<sup>1</sup>, the motion of the plunger has not been accelerated to such a degree but that the reversing takes place quietly. The returning plunger closes the holes *b* until it reaches the point in the upward stroke corresponding with the one represented in the figure.

*Claim*.—Effecting a water pressure upon the suction-end of the pump-plunger M, in direct-acting steam-pumps, at or near the completion of the stroke, without diminishing the resistance against the forcing-end of the plunger, in the manner shown or in an equivalent way, for the purpose of closing the suction-valves *a*, filling the vacuous space in the pump-chamber, preparing the force-valves for opening and acting conjointly with the steam pressure upon the piston B, whereby the steam-valve D is operated with precision, whatever may be its velocity.

No. 12,631.—BENJ. F. JOSLYN.—*Double-acting Pump*.—Patented April 3, 1855. (Plates, p. 187.)

This improvement consists in making a passage or water-way through the piston and the end of the cylinder, by attaching a tube A to piston L, extending through a stuffing-box in the end of the cylinder, and allowing it to play with the piston; the tube being provided with a valve H on the piston to prevent the return of the water. When the piston moves upwards, part C will be filled through valve F, water being supplied at B. When the piston moves downwards, the part D will be filled with water passing through tube A and valve H, whilst C discharges through valve E to the air-chamber M, and *vice versa*.

The inventor says: I do not claim placing cylinders in any particular position in regard to the air-chamber or other parts, nor the exact form or proportions of any of the valves, tubes, or other parts.

But I *claim* forming a direct passage to admit fluids to one part of the cylinder by means of a tube attached to and working with the piston, and passing through the other part and end, when applied to double-acting pumps, as described, or any other substantially the same.

No. 12,645.—ARCALOUS WYCKOFF.—*Chain-Pumps*.—Patented April 3, 1855. (Plates, p. 187.)

F is the elastic valve, consisting of four sections, so as to be able to move upward and make room for the upward passage of elevators E. The projecting ring G, underneath the valve, will prevent the sections from opening downwards, and the elevators from returning back with the water in case the motion of the chain is suddenly stopped.

The engravings exhibit only the lower half of the chain C; the upper half, together with the driving-wheel, being left away.

*Claim*.—The application of an elastic or other suitable valve to an endless chain-pump cylinder; said valve being arranged so as to be capable of only opening upward, substantially as and for the purpose set forth.

No. 12,753.—RUFUS PORTER and JONATHAN D. BRADLEY, assignors to JONATHAN D. BRADLEY and GEORGE DENNISON.—*Elastic Tube Pump*.—Patented April 17, 1855. (Plates, p. 187.)

The conduit A from the well terminates in a coil of India-rubber hose B, of sufficient thickness and elasticity to resist, when empty, the weight of the air. This hose is firmly attached to a stout helical surface C C', so that when traversed by a roller D, its several parts will be successively pressed, and will in turn recover by their elasticity *behind* the roller, thus producing a vacuum, drawing the water, while the roller's pressure forces the water which is before it. One-half of the helical surface or band C is fast on the stationary support H, the other half C' is attached to the first one by screws E. These two halves clamp firmly between them a bead F, projecting from the hose, thereby confining the hose to its place. When it is desirable that the spring of the hose should be relieved, or that the water should recede as soon as the pump ceases to act, the machine is so arranged as to produce what is equivalent to an elongation of the crank-arm; to wit, the crank

is applied to an eccentric axis of the roller, (o fig. 3,) and a short arm P extends from the crank, so that it will in a little less than a semi-revolution encounter a fulcrum Q, projecting from the supporting arm K. This purpose may also be effected by an eccentric, in or by cams on the main axis, allowing, however, in such case, the main axis I to revolve in stationary boxes. To equalize the resistance to the roller, the part of the hose where the helix has completed its circuit is made tapering to a less thickness, so that the roller coming round to encounter again the resistance of the *one* end of the hose, will at the same instant, at the other end, have the full spring of the rubber *behind*, but not the full spring before it. To ensure, however, the closing of the tube at this cone, we fasten under it a lift *s*, which corresponds with and compensates this diminution of thickness.

*Claim.*—1st. The mode of equalizing the resistance by a truncated cone of gradually diminishing thickness, by which the roller may leave the tube, in combination with a lift *s* below, as herein before specified.

2d. The relieving the spring of the tube, and the allowing the water to recede by means of jointed arms, eccentrics, or cams, as herein before specified.

3d. The mode of attaching the tube to the helical band by means of forming the latter in two parts, and by means of a bead or moulding on the former, as specified, for the purposes set forth in the foregoing specification.

No. 13,007.—EDWIN A. JEFFERY.—*Double-Acting Pump*.—Patented June 5, 1855. (Plates, p. 187.)

The object of this improvement is to simplify the construction of double-acting pumps.

C is the piston-tube; *a a'* the piston-heads; D the ball-valve; H the air-vessel.

The inventor says: I do not claim merely substituting ball-valves for other kinds of valves, in a tubular piston, with valve seats at its ends.

But I *claim* connecting the piston-heads by a long tube, having a short valve-chamber near its middle, with a single ball-valve, the water passing alternately through each end of the tube, and out at the sides of said valve-chamber; the valve-chamber being so short that the ball will exclude the water from one end, by rolling only far enough to admit the water fairly at the other, while the piston-heads are so far apart that the eduction-port shall always be embraced between them, substantially as set forth.

No. 13,214.—JAMES E. CRONK.—*Device to allow Escape of Waste-Water from Pump-barrel*.—Patented July 10, 1855. (Plates, p. 188.)

The nature of this improvement is clearly set forth in the claim.

*Claim.*—The valve G placed over the outlet passages *h*, leading from the chambers *c d e*, said valve being attached to a spring-lever H, which is acted upon by a sliding-rod I, arranged substantially as herein



shown, so that said valve will be closed by merely grasping the handles M M of the sliding-rod I and lever D in operating the pump. The valve being opened when the handles M M are freed from the hand by the action of the spring J, as shown and described.

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No. 13,219.—JOHN J. HEARD.—*Ship-Pump*.—Patented July 10, 1855. (Plates, p. 188.)

L is an opening in the gate G, which serves the purpose of opening a communication between the passage E and pipe F when the gate is raised; at such times a leather washer M upon the step N projecting from gate B closes the bottom of the water-way C, and cuts off the communication between the pump and the well D. If, now, the pump be operated, water can only be admitted through pipe F, which enters the bilge O. When the gate is lowered, passage E is closed and the pump is brought in communication with the well D. Thus the pump may operate either upon the water in the well or upon that in the bilge, as may be required.

*Claim.*—The attachment B with its gate G, operating in the manner and for the purpose set forth.

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No. 13,233.—JOS. SMART.—*Self-regulating Water-Packing for Pumps, &c.*—Patented July 10, 1855. (Plates, p. 188.)

One of the stuffing-boxes B is above the cap A, as in ordinary pumps, and the other beneath, leaving a space D between the two for admission of water, which is supplied by a small valve E in the plate of the lower box and opening inward. With every upward stroke of the pump a fresh supply of water is furnished, completely filling the space D, for the purpose of preventing the admission of any air to the working chamber.

*Claim.*—The application to pump-caps of two stuffing boxes, so arranged one above the other, leaving a space or reservoir between them; also the manner of supplying the same with water by means of a small valve on the lower plate, or any other, substantially the same, which will produce the intended effect, as described.

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No. 13,254.—JACOB EDSON.—*Improved method of Operating Valves of Pumps*.—Patented July 17, 1855. (Plates, p. 188.)

a c is the tripper referred to in the claim; the engravings represent it in two positions.

The inventor says: I do not claim a tripper for the purpose of opening the valves by the descent of the piston, as such have been used before; but I claim the peculiarly formed tripper described, in combination with the curved cap of the valve D, by which means a single tripper is made to open both valves, in the manner set forth.

I also claim the twisted partition Q, for the purpose set forth, whereby the cylinder is divided into two water-passages, which deliver the water upon the opposite side from that on which they receive it.

No. 13,273.—OLIVER PALMER.—*Rotary Wrecking-Pump*.—Patented July 17, 1855. (Plates, p. 188.)

This invention consists in the combination of an angular arm or bucket so made as to press the water outward from the shaft, with a spiral partition in the suction-pipe, which gives the water an initiatory rotation in the direction contrary to that in which the arms revolve. This is for the purpose of causing the rotation of the arms to force the water outward more effectually than it would do otherwise.

*Claim*.—The combination of the arms B B, constructed in any equivalent manner, with the spiral partition L.

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No. 13,299.—JNO. A. BURNAP.—*Double-Reciprocating Split-Piston-Rod for Pumps, &c.*—Patented July 24, 1855. (Plates, p. 188.)

The nature of this invention will be understood from the claim and engraving.

*Claim*.—In reciprocating rod-gear of valves or pistons, operating essentially as and for the purposes set forth, the double-reciprocating split-rod gear *s s*, when arranged and operating longitudinally side by side, as described, with the inner faces of the rods bearing against and acting as long moving guides and supports to each other, to strengthen them and prevent lateral shake or play, while their exterior is bound and tightened by one packing-box, and the two rods or split portions *s s*, with their respective valves or pistons, are free to move separately or in opposite directions to each other, for the admission, discharge, or cutting off of the gas or fluid, or for operation by the gas or fluid, as specified.

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No. 13,370.—HENRY R. WORTHINGTON.—*Improvement in Direct-Acting Hydraulic Steam-Pumps*.—Patented July 31, 1855. (Plates, p. 189.)

Suction-valves *a<sup>1</sup> a<sup>2</sup>* admit the water at the proper time from supply-pipe S, and force-valves *b<sup>1</sup> b<sup>2</sup>* deliver the same into discharge pipe F. Piston P keeps the opening A (in the middle of the water-cylinder, and connecting with the force-pipe at B by means of connecting-pipe H) covered until the stroke is nearly completed. At that point the piston passes into position represented in figure 1, and allows the fluid from the force-pipe to flow through H and A into the chamber behind the piston, for the purpose of relieving the resistance at or near the end of the strokes.

*Claim*.—The described mode of counteracting the resistance to the motion of the pump-piston in direct-action pumping engines, by which the steam-valve is moved; that is to say, by making a passage into the pump-chamber or cylinder, so arranged that said passage or opening shall for a time be uncovered or disclosed at or near the end of each stroke of the piston, by which the fluid, which is beyond or above the force-valves, passes behind the water-piston and makes pressure thereupon in the direction of said piston's motion, for the purposes set forth.

No. 13,459.—SYLVESTER H. GRAY.—*Improvement in Pumps*.—Patented August 21, 1855. (Plates, p. 189.)

By arranging racks between the pistons, and making one piston or its attachment serve as the guide for the other, and *vice versa*, the necessity is avoided of having the rod of one piston work through the rod of the other.

The inventor says: I do not claim operating the two pistons of a single cylinder double-acting pump, by means of two racks and a pinion, when said racks and pinion are arranged above the top or below the bottom piston, and the rod of one piston passed through the rod of the other; but I *claim* the employment and arrangement of the rod C C' and pinion D combined, between the pistons.

No. 13,559.—THOS. J. DE YAMPERT.—*Double-Acting Force-Pump*.—Patented September 11, 1855. (Plates, p. 189.)

The inventor says in his specification: By my peculiar arrangement, as shown in the drawings, I can, with a stroke of one inch, produce an effect equal to that produced by a stroke of four inches in a common pump, with a plunger of the same area; while this proportion can be increased by adding more cylinders, radiating from the centre of chamber A, and connected with the crossed-levers by suitable connecting-rods. The engravings represent two cylinders B C, with the pistons *d c*, connected by levers *l P o m*.

*Claim*.—The system of crossed-levers and connecting-rods herein described, when placed and operated in the intermediate or central chamber A, and when combined with two or more pistons, working in cylinders which radiate from the central axis or fulcrum of said levers, substantially in the manner and for the purposes set forth.

No. 13,622.—SAMUEL PEARN.—*Improvement in Ships' Pumps*.—Patented October 2, 1855.—(Plates, p. 189.)

The object of this improvement is to dispense with the usual valves in the construction of pumps. The system of pipes *a a'* is fastened to a proper frame, which is hung in journals. By swinging this apparatus alternately in opposite directions, to an extent sufficient only to enable the water by gravity to run alternately from the pipe of one series to the pipe next above of the other series, the water is elevated and finally discharged above.

The inventor says: I wish it to be distinctly understood that I do not limit myself to the mode of mounting the said pump, and of imparting motion thereto, which may be varied at pleasure.

I *claim* the combination of the two series of oppositely inclined conical pipes, when the small ends of the pipes of one series are inserted and projecting within the body of the pipes of the other series, and *vice versa*, with sufficient space around the inserted ends for the return of the water, as the apparatus is vibrated alternately in opposite directions, substantially as and for the purpose specified.

No. 13,643.—ELLWOOD GARRETTE.—*Improvement in Vibrating Pumps.*  
—Patented October 9, 1855. (Plates, p. 180.)

Supposing the two-winged pistons  $f h k g i$  to be in such a position that wing  $f h$  is close to  $m$ , and wing  $g i$  close to  $n$ ; as soon as axle  $k$  is turned so as to move the wings in the direction of arrow 2, the motion of wing  $g i$  will commence to create a vacuum in that part of compartment  $d$  which is in rear of the wing and compartment  $e$ , on account of the communication  $b a c$  between said parts of the two compartments. The water from inducing pipe  $g$  will enter the side passage, and (through opening  $b c$ ) it will fill the compartments  $d$  in the same manner as the piston wing recedes from the opening  $b$ , and it will fill the compartment  $e$ , on both sides of wing  $f$ , as the wing-valve  $h$  will be free to open in the direction of arrow 1. When the wings have finished their quarter revolution and commence their return motion, the resistance of the water will close the wing valve  $h$ , and the wing  $f$ ; in its motion towards  $c$ , will force the water (the communication of which with the induction pipe is cut off as soon as wing  $f$  in its return motion has passed the induction entrance) through  $c a b$  and through wing valve  $i$  (now opening in direction of arrow 1). By the time the wings have returned to their original position, the water (previously contained in compartments  $e$  and  $d$ ) will have filled the compartments  $d$  and  $o$ . When the wings now perform their second stroke in the direction of arrows 2, the wing  $g$  will lift the water contained in compartments  $d$  and  $o$ ; and by the time the second quarter revolution in the direction of arrows 2 has been completed, a quantity of water will have been forced up through the eduction pipe  $m$ , equal to the capacity of compartment  $d$ . At the same time the compartments  $e$  and  $d$  have filled with water in rear of the motion of the wings, as above described; and during the return motion of the second stroke (opposite arrows 2) the water will be forced in front of the wing  $f$  through  $c a b$ , and valve  $i$  into eduction pipe  $m$ . Thus this pump is made double-acting by means of two valves  $h$  and  $i$ .

*Claim.*—In vibrating double-acting pumps, the arrangement of the side passage  $a$ , with its openings  $b c$  into chambers  $e a$  respectively, in combination with the vibrating pistons  $f g$ , having their valves  $h i$  opening upwards, or in the direction of the outlet of the water, in the manner and for the purposes set forth.

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No. 13,816.—D. W. CLARK.—*Improvement in Double-Acting Pumps.*—  
Patented November 20, 1855. (Plates, p. 189.)

A represents the pump cylinder; B the valve chamber; C the inlet, and D the discharge pipes; and  $E E^1 E^2$  the three passages leading from the cylinder to the valve chamber.

The pistons F F are arranged to play over a rod passing up through the centre of the cylinder to near its top. G G are the eccentrics by which the pistons are operated; they are connected to the pistons by links H H, which turn on the pins  $a a$  of the pistons and the pins  $b b$  of the eccentrics. These eccentrics have cog teeth  $c c$ , and conse-

quently both operate together when power is imparted to the crank I and transmitted from it directly or by intermediate cog gearings J J to the eccentrics. As the eccentrics revolve, one of the pistons is caused to descend while the other ascends, and water is discharged through the two passages E<sup>1</sup> E<sup>2</sup> and drawn in through E; and as they continue their revolution, the pistons move together, discharge the water which rushed in through E as one ascended and the other descended, and simultaneously therewith draw in water through E<sup>1</sup> and E<sup>2</sup>.

The pins of the eccentrics (see fig. 2) are set so that they shall never be in line with each other, or both get on the centre at the same moment; the object in thus arranging them is, that when one of the pistons has just completed its stroke the other shall have commenced to return, and the pump be thus prevented from losing the water, as a continuous suction is kept up.

I do not claim the mere intermediate arrangement of the driving-gear to the two pistons in the one cylinder, as such is old; neither do I claim operating the pistons of pumps by revolving cranks or eccentrics, whether pitched in relation to each other, so that the pistons move simultaneously in opposite directions for the full length of their strokes, or only for the partial length thereof, when the said pistons operate in separate chambers or barrels, and are not driven by intermediate gear in the one cylinder or barrel.

I *claim* giving to the two reciprocating pistons, when arranged to move in the one cylinder by intermediate gear, as specified, a simultaneous travel in the same direction, at or about the period of change of stroke in the pistons, while for the remainder, or the greater part of their stroke, they travel in opposite directions to effect the required double action specified of the two pistons in the one cylinder or barrel, and whereby the one piston serves to follow up the movement of the other in their joint action upon the one body of water between the pistons, till a fair hold is got upon the water to render the suction continuous, neutralize the effect of leakage, and prevent the formation of an air or vacuous space between the two pistons at their turning stroke and run apart from the water between them, substantially as specified, by means of the revolving eccentrics G, or their equivalents, pitched or set with lead in relation to each other, and the two pistons of the single cylinder, as set forth.

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No. 13,881.—HOSEA LINDSEY.—*Improvement in Pumps*.—Patented December 4, 1855. (Plates, p. 189.)

The piston-rods being connected by the guide-rods G, one piston will be forced outward as the other is shoved inward, and the water will be forced out of the upper end of pipe C in a continuous stream.

The pipe and cylinder can be turned by means of crank D, or other contrivance.

I *claim* the horizontal cylinder E and pipe C, connected as shown; the cylinder being provided with valves *b b*, and piston-rods F F, the piston-rods being operated as the pipe C and cylinder E rotate by the curved flanch I, as shown and described, for the purpose specified.

No. 13,930.—C. D. WRIGHT.—*Improvement in Rotary Pumps.*—  
Patented December 11, 1855. (Plates, p. 190.)

The hollow shaft E serves as a force-pipe. When motion is given the shaft E and sphere C, rotating in the direction indicated by arrow, (see figure 1.) a suction or exhaust is created in the compartment *f* of the shell B behind the piston G, and the water will pass through suction pipe A into the compartment *c* of the shell, and from there through the opening H at one side of the flanch, enter and fill the compartment *f*; and when the same opening on the opposite side of the flanch passes out from the concave *a* in the inner side of the shell or body, the water will pass into the other compartment *e* of the shell B, and will be forced during the succeeding revolution of the sphere through the opening H, in front of the piston, and into the compartment *b* of the sphere, and out through the hollow shaft E. When the openings H on one side of the flanch D are open or free from the concave *a* adjoining them, the openings on the opposite side of the flanch are covered by the concave *a* adjoining them. By this means the proper cut-off between the compartments of the shell or body B are obtained, flanch D and piston G working water-tight against the inner side of shell B.

I claim the construction of the pump, as shown, viz: having the hollow sphere C placed within an inclined or oblique shell B, which forms the body of the pump, the sphere being attached to a hollow shaft E at one side, and communicating with a section pipe A at its opposite side, two opposite sides of the sphere fitting in concaves *a* in the side of the shell, the sphere being also divided into two compartments *b c*, one of which *c* communicates with the suction pipe A, and the other *b* with the force-pipe or hollow shell E; the sphere having a flanch D attached to it, which divides the shell or body B into two compartments *e f*, and the flanch having a piston G working in it, at each side of which apertures B are made in the sphere C, the above parts being arrayed, substantially, as shown, and for the purposes specified.

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No. 13,967.—JOSEPH WEIS.—*Improvement in Suckers for Pumps.*—  
Patented December 18, 1855. (Plates, p. 190.)

On the bucket being raised in the barrel A the pressure of the column of water above keeps the gum-elastic E tight over the orifices *d* in the hollow cone C, and prevents effectually any escape in that direction; while the same pressure also causes that portion of the gum-elastic which projects above the hollow cone to bend outwards and bear against the inside of the barrel, thereby forming a secure and water-tight packing. On the descent of the piston or bucket, the water below pressing through the orifices *d* against the gum elastic, forces the latter inward, and causes it, at the spaces intervening between the wings of the wedge-shaped block G, to assume the form shown in dotted lines, and thereby allows a free passage for the water. The moment the upward stroke commences, the gum-elastic resumes its former position. The cylindrical portion D serves as a guide.

I do not lay claim, exclusively, to cone-shaped elastic substances as

self-packing apparatus for pump-buckets, the same having been used before;

But I *claim* the wedge-shaped block G, with any convenient number of wings, in combination with the perforated hollow cone C, and the similarly shaped piece of gum-elastic, or other similar substance, E, arranged and constructed substantially as specified, the same to be applied as buckets or valves for pumps.

No. 13,979.—THOMAS CRANE.—*Improvement in Rotary Pumps.*—Patented December 25, 1855. (Plates, p. 190.)

By rotating the shaft C the eccentric hub D will cause the annular piston E to move within the chamber A, the periphery of the piston touching the inner side of chamber A only at one line as it passes around within the cylinder; and as the valve or cut-off F is attached to the edge of the annular piston E by projection *b* on said valve, being fitted loosely in the annular slot *a*, a reciprocating motion is given to the cut-off F. As the piston E moves in the direction indicated by the arrow, the edge of the piston divides the chamber A into two compartments, the obtained vacuum being the suction portion; and as the cut-off F moves downward in the chamber B, the recess *d* projects into the chamber A, and the water passes up through the suction-pipe H into part *f*, and at the same time the water drawn up previously is forced out of the other compartment *g* by the movement of the piston, the water being transferred from the suction to the force-passage, as the outer edge of the piston passes from the point *h* to the point *i*; and when the piston touches those points, the recess *d* is withdrawn from chamber A, so that the piston is not allowed to react and drive the water down the suction-pipe H.

I do not claim the eccentric hub D and annular piston E, for they have been previously used;

But I *claim* the combination of the hinged valve F with the eccentrically moving round piston E, when said valve is of the shape represented in the accompanying drawings, and is so arranged in relation to the pump-chamber A, the off-set chamber B, the suction-pipe H, and the eduction-pipe G, as to render it impossible for said pipes to be for an instant brought into connection with each other during any portion of the revolution of the piston E, substantially as set forth.

No. 13,590.—DANIEL BEDFORD.—*Apparatus for Discharging Reservoirs, etc.*—Patented September 25, 1855. (Plates, p. 190.)

The object of this improvement is to stop off the connection between the outlet-pipe *b* with the reservoir *a*, making it sufficiently tight to prevent the escape of noxious gases, and retaining a large quantity of water in the receptacle till the discharge takes place, when the whole contents are suddenly disgorged into the outlet, which acts as a percussive force to drive off all the more solid contents of the receptacle.

*l* is the water supply-pipe.

The inventor says: I lay no claim to a float for either opening or closing a valve, nor do I claim a balance-valve, when the levers and weights thereof are not so arranged as to hold the valve open when opened by the weight of water, &c.; these being old and well-known devices, and forming no part of my invention, which is the tumbling-lever-valve, and, combined therewith, the float.

Therefore, I *claim* the mode of hanging and balancing the valve *c*, by means of the lever *e* and its appurtenances, in the manner and for the purposes set forth.

I also claim, in combination therewith, the float *g*, for closing the valve *c* when the whole contents of the receptacle are discharged.

No. 13,126.—MOORE RUSSELL FLETCHER.—*Tidal Alarm Apparatus*.—Patented June 26, 1855. (Plates, p. 190.)

When the tide falls, the float *F* will move downwards with it and turn the barrel *A*, which will put in motion the striking apparatus and wind up the weight *G*, and *vice versa*, during the rise of the tide.

The inventor says: I do not claim a series of levers or hammers applied to a bell, nor a cylinder with tappets or pallets to operate such levers and cause them to be successively raised above and allowed to fall down upon a bell or a series of bells.

But I *claim* the improvement by which the bell is sounded both at rise and fall of the tide, meaning to claim the two tripping cams *n o* applied to each hammer, in combination with the float *F* and weight *G*, as applied to the barrel *A*, and made to put in revolution the said barrel as described, and thereby cause the tappet-cylinder to actuate the hammers either during the rise or fall of the tide, as explained.

No. 13,446.—CALEB WINEGAR.—*Method of Drawing Water from Wells*.—Patented August 14, 1855. (Plates, p. 190.)

*D D* are the two wires with the weights *E E*, which wires guide the gate *B*, which supports the bucket *A*, and which is drawn up and let down by a chain *c* attached to the said gate.

*Claim*.—The guiding of the bucket by means of two wires, or their equivalents; suspending two weights near the bottom of the well, in combination with the gate-frame, in the manner described.

No. 12,346.—RICHARD DEERING, Sr.—*Current Water-Wheels*.—Patented February 6, 1855. (Plates, p. 191.)

The object of this invention is to furnish a portable water-power, connected with a scow or vessel, so that it may be transported from place to place and anchored in any current.

The screw or worm is made concave on the side, with a small flange on the edge for the purpose of retaining the water as much as possible on the screw, which would otherwise tend to fly off at the periphery; and, as the power of the current on the screw will gradually lessen as



it progresses, the conical centre *c* will throw it towards the periphery of the screw, where its remaining force would be most available.

*Claim.*—The concave flanged screw, in combination with the conical body or centre, as and for the purposes set forth.

Also, the arrangement herein described of hanging the water-wheels and other machinery in framing adjustably connected with the vessel or scow, whereby they may be raised or lowered, for the purposes specified. (See engraving.)

No. 12,420.—THOS. TRIPP.—*Water-Wheel*.—Patented February 20, 1855. (Plates, p. 191.)

*Claim.*—So constructing the buckets that the direct surface (of the warped surface-bucket) shall receive the water in a direction normal to a plane parallel to the axis; and the reacting surface combined therewith, having its central line equi-distant from the axis, and at the same distance therefrom as is the central line of the direct surface.

No. 12,569.—OSCAR WILLIS.—*Centrifugal Water-Wheel*.—Patented March 21, 1855. (Plates, p. 191.)

The sides of the nut and rim of the wheel which form the sides of the bucket are bevelled to such an extent as will give space for the water to pass off without offering any resistance to the pursuing bucket, and at the same time to present a surface on each side of the bucket diagonal to the central vertical line of motion to receive the reactive power of the water acquired by its spreading on the bucket. The buckets range on the top of the wheel on a line in front of the centre of the wheel tangential to a circle of suitable diameter described around said centre, so as to receive the water at such an angle as will overcome the centrifugal direction it has obtained in passing the inclined ways in the block, or bottom of the forebay, and thus prevent it from running or rushing to the outer edge or rim of the wheel. The wheel is shrouded on top so as to prevent the escape and loss of water in its applications to the buckets, and to prevent injury being done to them by any hard substance hanging between them and the inclined ways in the block or bottom of the forebay. The orifice of discharge from the block is so proportioned to that at the tail of the bucket, that a column of water about one-third less in size than that of the orifice of discharge at the tail of the bucket is all that can be admitted at a time to the wheel's buckets. The buckets are set in the nut and rim of the wheel on a curved line, and the centre part of the top edge of the bucket is bent forward in the direction of its motion; so that the top of the bucket is curved on its edge, and the upper part of the central vertical section of the bucket, where the water first strikes, is a straight inclined plane at a slightly-obtuse angle with the direction of the water.

The inventor says: I do not claim a curved bucket, nor do I claim bevelling the nut and rim individually, nor do I claim them when com-

bined in such a form as to facilitate the escape of the water only, as this has been done by Fontaine Jonval, and others, previously.

But I *claim*, 1st, the peculiar double-curved buckets, in combination with the bevelled rim and hub, or nut, in the manner and for the purposes set forth.

2d. I also claim ranging the top of the bucket on a line tangential to a circle of suitable diameter, described around the centre; its inner being in advance of the radial line, substantially as and for the purposes specified.

3d. I also claim forming the annular water-space on the upper side of the wheel, substantially as and for the purposes specified.

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No. 12,606.—WILLIAM S. SMITH.—*Current-Wheel*.—Patented March 27, 1855. (Plates, p. 191.)

*d* are braces which connect the paddles *c* to the upper hub *a*; the lower hub *a*, to which the paddles are attached, is united to the upper hub by means of bolts *b*. This hub *a a* is movable on shaft *S*, and can be elevated or depressed by a lever. The shaft inclines outwards from the bank, so as to bring the paddles nearly horizontal when they reach the water; the depth to which they are permitted to descend being regulated by means of the sliding-hub, which can be maintained at the desired height by a pin *m*.

*Claim*.—The construction of current-wheels, with heads or hubs movable on the shaft, as and for the purposes set forth.

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No. 12,779.—JAMES B. HURT.—*Mode of Applying Eccentric Wheels to Water-Power*.—Patented May 1, 1855. (Plates, p. 191.)

No description required.

*Claim*.—The water-wheel, without arms or main shaft, revolving on fulcrum-wheels underneath, thereby lengthening out the lever-power near the whole diameter of the wheel; the thin and thick interties shouldered and bolted to each rim; the cast segments bolted to middle rim, which gears into the cogs of wollower on horizontal shaft, extending across on the inside of water-wheel; also, the two revolving fulcrum-wheels, with flanges on the outside of each wheel to keep the water-wheel in its true position.

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No. 12,927.—JOHN TYLER.—*Curbs for Water-Wheels*.—Patented May 22, 1855. (Plates, p. 191.)

This improvement enables the outer extremity of the lip *b* to be brought closer to the extremities of the buckets than it would be safe to do if it were a solid portion of the curb. Any impurities or obstructions drawn into the wheel and brought into contact with the said lip will throw the lip open, (see figure 1,) and thus prevent injury to the curb or buckets.

*Claim*.—Combining the within-described hinged-lip *b* with the curb.

of a water-wheel in such a manner that its inner curved surface forms the termination of the scroll water-way surrounding the wheel, whilst its straight surface forms one side of the mouth of the said scroll water-way, for the purposes herein set forth.

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No. 12,949.—DEAN S. HOWARD.—*Water-Wheel*.—Patented May 29, 1855. (Plates, p. 191.)

The object of this arrangement of the buckets and plates between, is to receive the direct action of the water at the periphery of the wheel, whence the buckets verge from a vertical towards a horizontal course along the shaft, forming a double conical screw.

*Claim*.—The combination of the curved sides and twisted buckets, whereby the water is discharged at or about a right angle with its course in the scroll on entering the wheel, when the pressure of the water is applied to the convex side of the bucket, the wheel revolving in the same direction that the water passes through the scroll, as and for the purposes described.

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No. 13,172.—BIRDSILL HOLLY.—*Method of Regulating the Issue-Aper-  
tures and of suspending Turbine-Wheels*.—Patented July 3, 1855.  
(Plates, p. 192.)

As the hand-wheel P is turned, the action of the screw M and nut K will raise or lower the wheel A, and thus regulate the extent of the issues.

*Claim*.—The mode described of opening and closing the issues, and regulating their extent, in combination with the mode of hanging the revolving-wheel, as set forth.

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No. 13,280.—WILLARD M. WHEELER.—*Water-Wheel*.—Patented July 17, 1855. (Plates, p. 192.)

The rims B have spaces A for the buckets C to play in. The buckets (which are pivoted at E), after passing guard o, are opened a little by the springs L, when the water catches in the bucket, and throws it open; the pivots of the buckets pass through the rim, and are fitted to receive arms F, which have friction-pulleys G at their ends. Around these pulleys there is placed an endless band D, which is just long enough to allow the buckets receiving the action of the water in the flume M to be open, and hold the others, all or nearly all, closed. The guard o fits down between the rims to the body of the wheel, and has a lip extending up over the wheel rather more than the width of the bucket. In the guard o there are fitted slides, with springs to press them out against the rims to keep a tight joint. These slides are made large enough to cover one of the spaces A at each side, and prevent the water rising around and over the guard o.

1st. I *claim* closing the buckets by means of the band or chain in connection with the arms and springs, operating as described.

2d. I claim the guard with its slides, operating in the manner and for the purposes described, or any other substantially the same.

No. 13,287.—HENRY VAN DE WATER.—*Turbine Water-Wheel*.—Patented July 17, 1855. (Plates, p. 192.)

By raising or lowering the cylindrical gate E, the opening for the discharge of the water between the lower edge of said gate and the surface of the cone C can be regulated. The chutes or guides *i* are curved or of a spiral form, corresponding to the buckets *h*; and at the mouth of each chute there is a slide *j*, which is connected to a circular rim I, which rim can be raised or lowered, (by proper mechanism, not shown in the engravings,) so as to increase or reduce the mouth of each chute.

The inventor says: I am aware that the French turbine (Jonval's) receives power from the water the same as mine, viz: first, by gravity, and then by suction. The first column operates by the same law as in ordinary wheels; the second part of the column, that is to say, from the bottom of the wheel to the lower part of the fall, would in ordinary wheels, which discharge in the open air, be of no additional effect to the wheel, as the water would leave this point without velocity, and would only fall by its gravity. I do not claim, therefore, placing the wheel H within a cylindrical casing, the lower end of which is immersed in the "tail-water" underneath the wheel; for that has been previously done.

But I *claim*, first, the employment of the guide or concave conical projection C, at the lower part of the casing A, in combination with the cylindrical gate E; the above parts being constructed and arranged as shown, and for the purpose as set forth.

2d. The chutes or guides *i* placed above the wheel H, in combination with the slides *j*, which form a gate by which the water is admitted in proper quantity upon the wheel, and tangentially thereto, as described.

3d. Surrounding the wheel H with an annular chamber or recess *g*, in combination with the buckets *h* of the wheel H, when said buckets are formed as shown, viz: with smaller spaces between their lower ends than their upper ends, for the purpose of causing the water to act upwards against the lower surfaces of the buckets, and thereby relieve the step of the shaft D of the weight of the wheel and said shaft, as shown and described.

No. 13,366.—C. C. TAYLOR.—*Improv'd Bucket for Water-Wheel*.—Patented July 31, 1855. (Plates, p. 192.)

Fig. 3 represents a section on line *x x*. The water enters through *h* in the direction of arrow 1, impinging upon *e* with direct percussion, and passing from the bucket, as indicated by arrow 2, when it favors rotation in the direction of arrow 3 by reaction. After the water strikes *e*, the centrifugal force due to rotation carries a portion of the water

outward into the conical part *c* of the bucket, upon which it reacts on leaving the wheel, adding to the reactive power of the wheel.

*Claim.*—Swelling the outer portion of the bucket into a conical surface, as described, and combining the same with the double-inclined plane *e d*, substantially as and for the purposes specified.

No. 13,458.—WM. FIELDS and SOLOMON GERHARD.—*Improved Pressure Water-Wheel*.—Patented August 21, 1855. (Plates, p. 192.)

The valve B is opened by the inclined side of each bucket when the wheel is in motion, the valve being pivoted in the centre, so that the pressure of the water above the valve is nearly balanced, requiring very little power to open it.

*Claim.*—The combination of the valve B with the buckets A upon the wheel D revolving in the case C, substantially as described.

No. 13,685.—HIRAM MORRIS, ELIJAH K. GORTON, and EDWARD SAEGER.—*Impact Water-Wheel*.—Patented October 16, 1855. (Plates, p. 193.)

Each of the buckets *c* has a vertical slot through its middle part, through which a bolt *e* passes, which bolts hold the upper *f* and lower rim *g* together. The rims have segmental incisions *a*, which receive the flanges of the buckets, and which incisions are somewhat longer than the buckets, which latter have the same curvature as the incisions. Consequently each bucket can be turned towards or from the centre of the wheel, so as to close the buckets or open them more or less, and they can be fastened in the desired position by means of a latch *k* (pivoted to the side of each bucket) taken into one of the small holes *b* in the lower rim.

*d* is the circular concave packing-ring, which is to guide the water into the wheel, which can be adjusted higher or lower by means of adjusting-box P.

*Claim.*—1st. The buckets, so constructed as to be adjusted and movable to open and close the issues, as may be desired, by means of the circular grooves in the rim of the wheel and flanges on the buckets, and the studs and bolts passing through the buckets, and the fastening the buckets in any desired position by means of a latch and catch, in the manner described.

2d. We claim a circular concave packing-ring and decking, with the adjusting-box, constructed in the manner described.

No. 13,793.—RICHARD L. NELSON.—*Self-Feathering Adjusting Tide-Wheel*.—Patented November 13, 1855. (Plates, p. 193.)

Hub C is so arranged that it may freely slide up and down on shaft B, but turns with said shaft. Rods *a* pass through said hub, and two buckets D D<sup>1</sup> (the broad surfaces of which are at right angles to each

other) are attached to each rod  $a$  both sides of the hub. To the lower end of the hub, so as to rise and fall with it but not to turn around with it, is arranged a segmental cam  $E$ . As the blades  $D^1$  (which are the ones receiving the action of the flowing water and stand perpendicularly therein) strike the incline  $b$  of the cam, they turn to a horizontal position, bringing their fellows  $D$  into a vertical position.

$F$  is a brake-disc attached to shaft  $B$ ;  $e e^1$  are pressing-wheels arranged in sliding pieces  $G G^1$ , connected to levers  $H$ , which latter are pivoted  $f$ , and have floats  $I I^1$  at their upper ends. When the current is in the direction of arrow 1, the brake-wheel  $e$  is drawn away from disc  $F$ , and the wheel  $e$  is forced against it by the power of the current, carrying with it float  $I$ ; and *vice versa*, when the current flows in the direction of arrow 2.

*Claim.*—The arrangement of the floating cam and the floating self-feathering blades or brackets, when said cam and blades are made to rise and fall with the rise and fall of the stream or water that drives the wheel, substantially as described.

Also, in combination with a tide or current water-wheel, the self-acting water-brake, for causing the variable force of the current to be applied to the regulating of the speed of the wheel, substantially as described.

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No. 13,895.—JOHN H. GATISS, assignor to ABRAHAM EDWARDS.—*Improvement in Water-Wheels*.—Patented December 4, 1855. (Plates, p. 193.)

$A$  represents a rectangular box, with an opening  $B$  in its centre for the expended water to escape from. The buckets  $D D$ , etc., are fixed radially on shaft  $e^1$  by means of arms  $a a$ , etc. Tangential with the circle described by the outer points of the buckets, are placed the wings  $E E$ , etc., so as to leave water-ways or inlets  $c c$ ,  $c^1 c^1$ .

$F$ , figure 2, is a desk which fits snugly over the wings  $E$ , and is fastened to it by means of screws  $f f$ , etc., and holes  $i i$ , etc.  $G G$  are two segmental pieces, having upon them the gates  $k k$ , etc., so set that they will slide with the grooves  $e e$ , etc., in the wings  $E$ , and close or open the passages. To each of the pieces  $G G$  is attached a rod  $H$ , by which rods they can be raised. The shaft of the water-wheel can be excluded entirely from the water by means of trunk  $I$ . Figure 3 represents the shape of the buckets; the lips or flanges  $b b$  are for the purpose of holding the water to the face of the bucket, and causing it to escape to the centre of the wheel; and bringing these lips to a sharp edge, as seen at  $b b$ , prevents the formation of a counter current at those points.

I am aware that centre-vent water-wheels have been used, and that the shafts of such wheels, as well as the wheels themselves, have been enclosed in a flume; these, therefore, I do not claim.

But I *claim* the arrangement of the gates, passages, and buckets of a centre-vent wheel, such as described; so that the water may act upon each bucket simultaneously and with equal force, first striking them at their very lowest points, and held thereto by the lips or flanges, and then escaping to the centre discharge, as set forth and shown.

No. 13,198.—ATCHINSON QUEAL.—*Impact Water-Wheel*.—Patented December 11, 1855. (Plates, p. 193.)

A semi-circular horizontal rim B is permanently fitted around a suitable framing, and has two plates *a a* attached to one of its ends, which ends form a quarter circle in length. C is the wheel, which is formed of a circular head D fitted directly over the rim B; to said head D a circular plate E is attached underneath the rim B. An aperture F is made through the centre of the head and plate E, said aperture being made through a solid hub *b*; and the shaft G passes through this aperture, the shaft being connected to the wheel by pins *c*, which fit in the sides of the hub *b*, said pins projecting from opposite sides of a ball *d* on the shaft.

M is the induction, and N the eduction opening, the two passages being on opposite sides of the partition L. The water acts in the space between the head D and plate E upon one of the buckets H, which descends within the space as its roller *f* descends the inclined semi-circular rod J, and the wheel is turned in the direction indicated by the arrow, figure 1. When the bucket H approaches the eduction-passage N, it is raised in consequence of its roller *f* passing up the inclined rod J, and the water is discharged. (See arrow 2, figure 2.) The other bucket is operated in a similar manner. By this improvement the water is not allowed to act laterally upon shaft G, and consequently under-friction in the bearings is avoided. The head D and plate E are also kept parallel with the rim.

I *claim* the sliding-buckets H placed in the head D of the wheel, and operated by the inclined semi-circular rod J, in combination with the partition L, arranged as shown and described.

I further claim attaching the wheel C to the shaft G by means of the pins *c c* fitting in the hub *b*, the pins being attached to a ball *d* on the shaft, for the purpose set forth.

No. 12,208.—FRANK G. JOHNSON.—*Self-Regulating Wind-Mill*.—Patented January 9, 1855. (Plates, p. 193.)

The inner ends of the sails A are pivoted to (what the inventor calls) the spoke-wheel *h* (only two of the sails A being shown in the engraving.) This wheel *h* is keyed to the shaft N. The regulating-wheel *c* and the brake-wheel *d* turn loosely on the same shaft. The inner ends of the sails are mounted on plates P, each of which has an arm with a slot S fitting over one of the pins *b* on the circumference of the regulating-wheel. Bolts *d* are attached to the spoke-wheel, and pass through slots *i* in the regulating-wheel, so that they do not interfere with the motions of this wheel; on their outer ends (between the regulating and the brake wheel) they form the fulcra for bent levers, the longer arms *x* of which carry weights at their ends; the shorter arms of them are connected to the rim of the regulating-wheel by means of spiral-springs *o*, and thus they (the shorter arms) are drawn towards the rim of the regulating-wheel, and the arms *x* towards the central axis N. But when the velocity of the wind-mill increases, the weighted ends of the arms *x* will fly out by their centrifugal force; and as the

shorter are pivoted (in *e*) to the regulating-wheel, this latter will be moved in the direction of the arrow *y*, and the pins *b* will move the outer ends *S* of the plates *P* around the centres *E* of the plates, and the edges of the sails will turn against the wind.

The shorter arms have prolongations *g*, to the ends of which cords are attached; the other end of said cords is wound around the hub *m* of the brake-wheel *d*. By pulling cord *i* the arm *o* of brake-lever *o p* will press upon the circumference of the brake-wheel and retard its motion, while the wheels *c* and *h* pass on. The cords *j* will wind around the hub of the brake wheel and draw in the arms *x*. Thus the sails can be turned edgewise to the wind, and the mill be stopped whenever desirable.

The inventor says: I do not claim as my invention the method or principle of regulating wind-mills by the use of weights or governors revolving with or by means of the wind-mill, and controlling the sails thereof through the intervention of levers and cords.

But I do *claim*, 1st. The combination together of the hub or spoke-wheel, the regulating-wheel, (figure 3,) and the brake-wheel, etc., (figure 1,) with their several parts, constructed, operated, and controlled, substantially in the manner and for the purpose herein set forth.

2d. The combination together of the weighted levers *x x x*, the hub or spoke-wheel, and the regulating-wheel, (figure 3,) substantially in the manner and for the purpose herein set forth.

No. 13,067.—CHARLES R. WEBB.—*Wind-Mill*.—Patented June 12, 1855. (Plates, p. 193.)

The claim and engravings sufficiently explain the nature of this improvement.

The inventor says: I do not claim anything as to the form of sails, as my invention can be applied to all kinds. I do not claim the general principles embraced in my arrangement of mechanisms for operating wind-mills.

But I *claim* placing the two cog-wheels *G F* in the head of the mill, so that they shall gear into each other in the centre thereof, and bringing down the power from said wheels by an oblique shaft, whose foot or bearing is vertically beneath the teeth in contact in the head of the mill.

No. 13,156.—ADDISON P. BROWN.—*Self-Regulating Wind-Mill*.—Patented July 3, 1855. (Plates, p. 194.)

The outer hinge *L* on each arm *I* of the fan encloses the arm, and has in it a helical slot, with a pin in the arm. The hinge itself is heavy, being virtually a weight, the centrifugal force of which will tend to turn the fan edgewise. Any sudden impetus of the wind moves the two sliding-hubs *E* and *N*, overcoming the spring *F*, and lifting the weight *G*; and the bars *G*, by means of their thimbles *H*, push the fans *K* further out upon their respective arms *I*, while the helical slot and



pin at L turn each fan simultaneously edgewise to the wind to a degree proportionate to the force of the wind.

*Claim.*—1st. The helical slot and pin, as a means of governing the degree of obliquity of the fans to the wind.

2d. The combination of weights with the helical slots and pins, combined and operating in the manner and for the purpose specified.

No. 13,244.—JOHN ELGAR.—*Self-Regulating Wind-Mill.*—Patented July 10, 1855. (Plates, p. 194.)

Two wings C C are hung with hinges by their edges to each arm of a vertical wheel, independent of each other, which may revolve about their hinges within certain limits, and are kept up against stops in their proper angle to the wind, in plane with each other, by springs acting on the back of the wings. The wings, which, in the rotation of the wheel, are aft of the arms, are held up to their stops by springs so strong as to yield only in a storm, and thus relieve the wheel from too great pressure. In common winds they are stationary, and furnish the means of a constant power to propel the wheel, while the wings which are forward of the arms are held up to their stops in light winds by weaker springs, and move back when the breeze is stronger.

*Claim.*—A double set of wings attached to the arm of a wind-wheel and to act in the following manner: One set, those that are *behind* the arms in the line of rotation, are stationary in their plane, except in a storm, and furnish the means of a *constant* power; while the other set, those which are forward of the arms in the rotation of the wheel, are controlled by the wind and springs so as to act automatically, even in the varying impulse of the wind, and relieve it from danger of injury in a storm, substantially as described.

No. 13,247.—BENJAMIN FRANTZ, assignor to JOHN PHILLIPS.—*Self-Regulating Wind-Mill.*—Patented July 10, 1855. (Plates, p. 194.)

The wind, when too violent, will depress the fan M and lever K, and regulate the position of the fans G by the operation of the intermediate parts mentioned in the claim.

*Claim.*—Making a direct use of the wind itself for governing wind-mills, by means of the wind-lever K, or its equivalent, connecting rods m m, collar I, and strap-rods e e, in combination with the wings G G, substantially in the manner set forth.

No. 13,268.—J. S. MORGAN.—*Wind-Mill.*—Patented July 17, 1855. (Plates, p. 194.)

The inventor says: I do not claim separately forming the wings or sails in pairs, and connecting the same by pinions so that the two parts of the sails or wings will move simultaneously towards and from each other, for this has been previously done; but for the purpose only of allowing the sails to close when moving against the wind, and to open



when acted upon by the wind, there being no device applied for the purpose of regulating the wings or sails to insure an equal motion of the mill.

I claim connecting the weights  $m$  to the wings or sails  $h$  by means of the cords or chains  $j$   $i$ , said wings or sails being arranged in pairs and connected by pinions  $g$   $g$  and weights and cords or chains, arranged substantially as shown and described.

No. 13,288.—JOS. DICKINSON AND OLIVER WHITE.—*Self-Regulating Wind-Mill*.—Patented July 17, 1855. (Plates, p. 194.)

When the wind, acting against the face-plate  $F$ , becomes sufficiently strong, it will overcome the action of spring  $I$ , and push back the plate, and turn the vanes  $C$ , as they are connected with the plate by means of cranks  $H$  and rods  $G$ .

The figure represents a plan of the machine.

*Claim*.—Applying to a wind-mill or motor a governor or regulator, which shall change the angle of the vanes with the plane of the periphery of the wheel, thus regulating the force of the wind upon them, by the force of the wind or motive power alone, by means of the face-plate  $F$ , spring  $I$ , rods  $G$ , and cranks  $H$ , or their equivalents, constituting an arrangement effecting the purpose set forth.

No. 13,969.—JEREMIAH BURNITE, assignor to HIMSELF and JAMES CLARK.—*Improved Arrangements and Combinations of Machinery for Regulating Velocity of Wind-Wheels*.—Patented December 18, 1855. (Plates, p. 194.)

The plates  $L$  and  $D$  (to which latter is secured the wind-wheel frame  $A$ ) are keyed to shaft  $C$ ; the shafts  $E$  and  $F$  revolve with shaft  $C$  without revolving on their own geometrical axes; and wheels  $I$  and  $K$ , being in gear with the cog-wheels  $M$  and  $N$ , revolve around their own axes at the same time they revolve around shaft  $C$ . The cogged-rim  $P^1$  is fastened to the frame of the machine by pillars  $O^1$ ; and the wheels  $M^1$   $N^1$ , on the same shafts with wheels  $M$  and  $N$ , play respectively around the outer and inner circumference of rim  $P^1$ . When, through the increasing force of the wind, the wind-wheel makes more revolutions than required, then the balls  $O$ , by their centrifugal power, will rise, and by means of the links  $P$ , they will raise the plate  $Q$ . The plate  $R$  is firmly connected with plate  $Q$  by means of rods  $h$ , which pass through holes in disc  $S$ . Two other discs,  $k$  and  $l$ , are secured together firmly by means of braces  $T$ . On the lower disc  $K$  rests a vertical rod  $q$ , which is also held by the upper disc  $l$ . When, by the rising of disc  $R$ , the discs  $k$  and  $l$  are raised, the rod  $q$  is raised with them, and striking with its head against cross-piece  $p$ , which connects the two cylinders  $d$ , it thus strikes the pieces  $g^1$  and with it the clutch  $m^1$ , when, at the same time, it lowers  $g$  and the clutch  $m$ , so that the recess in clutch  $m$  will catch the pin projecting from wheel  $K$ , causing the wheel  $K$  and shaft  $F$  to revolve with the clutch. Thus a revolving motion will be imparted to wheel  $U$ , which latter is provided with cogs on its inner

periphery, where it is acted upon by one of the wheels G or H; besides these, it is provided on its lower periphery with bevelled cogs, which act on the bevel-wheels  $n$  on screw-shafts X, one to each of the said frames W. As soon as the bevel-wheels and screw-shafts revolve, the said screw-shafts (passing through nuts V, attached to frames W) move the sliding frames W radially inward, so as to diminish the leverage of the sails, and consequently to retard the motion of the wind-wheel. It will be understood that when the wind becomes too weak the clutch  $m$  will have risen, and clutch  $m^1$  will sink and clutch the wheel I, and wheel G will move plate U in the opposite direction, and the screw-shafts X will move the sail-frames radially outwards so as to increase their leverage.

During the movement just described, the sails themselves undergo a change. Each of the wings consists of two separate frames, one of which is movable in shaft  $u$ , the other stationary. The two frames have alternate square openings, so as to present one continuous surface when the wind acts with average force. When screw-shaft X moves the sliding frame inward, the bevel-wheel  $r$  is turned by running over rack  $s$ , and thus  $t$  is turned together with screw-shaft  $u$ , which latter, by passing through a nut attached to the movable one of the two sail-frames, depresses said movable sail-frame so that the openings in the two frames, after a certain movement, correspond together; and thus the surface of the wing on which the wind can act will be reduced, and the motion of the wing will also be retarded.

*Claim.*—First, causing the vanes or sails to traverse automatically from or towards the centre of the wind-wheel, by means substantially such as described and for the purposes set forth; also, in connexion with the centripetal and centrifugal traversing of the sails, or vanes, the vertical adjustment of the same, viz: causing the double lattices, of which the vanes are composed, to expose more or less surface to the wind, by making the slats of one cover more or less the openings in the other, substantially as described.

## XII.—MECHANICAL POWERS.

No. 12,732.—LEWIS SMITH.—*Compensation Bearings*.—Patented April 17, 1855. (Plates, p. 195.)

A represents part of a cross-head, and CC the bearings or gib of the slide B. CC are made of brass; the bars DD, forming a toggle joint, are of iron. If the brasses bear too heavily on the slide, the heat produced by undue friction will cause the brasses to expand more than the bars, and thus the toggle joint will be allowed to straighten, and the gib to move slightly away from the slide. The same principle can be applied to journal-boxes, &c.

*Claim.*—Relieving bearings of machinery from undue pressure, and consequent friction, by means of the different expansion of two or more

different metals; the parts being constructed, combined, and operating substantially as herein set forth, or in any other manner substantially the same.

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No. 12,928.—JONATHAN WHIPPLE, JR.—*Improved Self-Acting Nipper-Block*.—Patented May 22, 1855. (Plates, p. 195.)

The part E of lever E D has on its upper side a groove (terminating into a fork F). The rope passes freely between the fork and between the said groove and the groove of the pulley A, when travelling in the hoisting direction (see arrow *x*). As soon as the drawing power and the hoisting ceases, and the rope tends to move back in the direction of arrow *y*, the ratchet-wheel R, on the axis of pulley A, acts upon pawl C, thereby depresses the arms D of lever D E, presses arm E upwards, and clamps the rope tight between the two grooves.

*Claim*.—The construction of the self-acting nipper-block with one wheel or pulley, combined with a ratchet-wheel, pawls and levers, and jaw or nipper, substantially as set forth and described.

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No. 13,976.—BENIJAH J. BURNETT.—*Improvement in Cranes*.—Patented December 25, 1855. (Plates, p. 195.)

The nature of this improvement will be understood from the claims and engravings.

*Claim*.—1st. The pendant segmental traveller E, freely suspended and balanced from the jib and top of the tower by means of the main braces B and back-stays A, arranged to spread outwards from towards the top downwards, as shown and described, and whereby the “tripping out” or lateral displacement of the foot of the crane or segmental traveller E is obviated, all twisting or binding avoided, and a perfectly free but steady action given the same, either as regards pressure in the vertical direction transferred to the top of the tower, or horizontal swing, as set forth.

2d. The combination and arrangement with the segmental traveller E, or swinging foot of the crane of the circular or revolving frame H, of anti-friction rollers *v* freely suspended on the tower, and rotating round the same, together with the swinging foot or segmental traveller, by the horizontal pressure of the latter on the rollers, in contact with their bite, on or against the fixed belt *x* surrounding the tower, substantially as shown and described for the purposes set forth.

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No. 12,288.—ISAAC J. COLE.—*Improved Compound Crow-Bar*.—Patented January 23, 1855. (Plates, p. 195.)

This instrument is particularly designed for use on railroads, in assisting to lift the wheels of locomotives when off the track.

The inventor says: I do not claim the combination of the two levers B C, as such a combination is well known; but I *claim* the combination of two levers B C, the latter having a circular projection G on its lower

side, with the head-block A, in the manner and for the purposes substantially as set forth.

No. 13,269.—EDWARD MINGAY.—*Improvement in Derricks*.—Patented July 17, 1855. (Plates, p. 196.)

By winding up rope *k* by turning windlass *f*, the long arm of lever *l* will be depressed, and weight *l* quickly elevated, while, at the same time, windlass *g* being operated, also assists in raising the weight; after the weight has been raised, *h* can be elevated to its original position by means of rope *r*.

*Claim*.—Attaching to a derrick a lever *h*, having its fulcrum *i* in the boom *c* of the same, and actuated by a rope *k* and windlass *f*, substantially as described.

No. 13,813.—G. W. BIGELOW.—*Improvement in Cutting Teeth of Gear-Wheels*.—Patented November 20, 1855. (Plates, p. 196.)

The blank B<sup>1</sup> is secured to the upper end of shaft U, and the cutter C<sup>1</sup> to the slide G. Motion being given the driving-shaft I, the shaft C will rotate, and pinion F will force down the slide G. When the cutter has performed its work, one of the smooth portions of the periphery of pinion F will come in contact with rack *d*, and spring H will throw up the slide G to its original position. Just previous to the termination of the downward stroke of the slide, one of the pins *i* will catch into recess *h* in arm Z, and will raise bar Y; and the belt R, (which passes around pulley P and a pulley at the end of shaft C,) while the slide G is descending, will wind up the coil-spring Q, the shaft M being prevented from turning in consequence of the pawl X bearing against one of the projections *e* on plate O. As soon as slide G is thrown up by spring H, the pin *i* will pass out of recess *h*, and bar Y will fall and strike upon the outer end of pawl X, and throw the inner end free from the projection *e*; and the coil-spring Q will then rotate the shaft M about half a revolution, until the pawl catches against the other projection *e*, and shaft L will also be rotated in consequence of gear-wheels N N, and screw S will turn the worm-wheel T, and the blank will be turned a requisite distance, preparatory to the next cut of the cutter. The blank may be turned a greater or less distance at each stroke of the slide by placing different sized wheels N N upon the shafts L M.

*Claim*.—Giving the blank or wheel to be cut an automatic feed-motion, by means of the pulley P on the shaft M, said pulley having a coil-spring Q within it; the screw S on shaft L, the worm-wheel T on the lower ends of the shaft U, and the circular plate O having projections *e e* upon its periphery, and the pawl X and bar Y provided with the arm Z, the arm being operated by the pins *i* on the inner side of the pulley D; the parts being arranged substantially as shown and described.

No. 12,280.—SAMUEL GIBSON JONES.—*Improvement in Lifting-Jacks*.—Patented January 23, 1855. (Plates, p. 196.)

The weight, which is supported by the forked-end *g*, is lifted by bringing the long arm of lever *C* from position figure 1 into position figure 2.

The inventor says: I do not claim either of the three parts *A B C*, irrespective of their relation and adaptation to each other.

I *claim* the peculiar manner in which I combine the main post *A*, the sliding-piece *B*, and the bent-lever *C*; the fulcrum of the said lever *C* being placed near the lower end of the main post, and its weight-point *e* adjustably connected with the sliding-piece *B* by means of the holes *f*, near the lower end of the said sliding-piece, whilst the upper end of the same piece is adapted to slide within the loop *c*, formed on the upper end of the main post, all as and for the purpose described.

No. 12,345.—NELSON B. CARPENTER and JOHN POWERS.—*Improved Lifting-Jack for Moving Rail-Cars*.—Patented February 6, 1855.—(Plates, p. 196.)

The slide is placed underneath the weight to be raised, and the screws *B B* of the two jacks are then turned, and the two jacks, frame and slide, with the weight, will be raised. When sufficiently raised, the screw-rod *G* is turned, and the slide *E*, with the weight upon it, may be moved laterally.

The inventors say: We do not claim the jacks *A A* separately, for they are well known and in common use; neither do we claim the combining in the same machine of any mechanical powers for giving a vertical and lateral motion to the object or article to be adjusted; nor do we claim the slide *E*, separately, or in itself considered. But we *claim* the improved jack, constructed substantially as shown and described, viz: connecting two ordinary screw-jacks *A A* by a frame *C*, provided with an arch *D*, and having a slide *E* fitted on the upper part of the frame *C*, the slide being connected to the frame, as herein shown, and operated by a horizontal screw *G*, for raising and adjusting railroad cars upon the track, and other analogous purposes.

No. 12,464.—THOMAS C. BALL.—*Improvement in Jack-Screws*.—Patented February 27, 1855. (Plates, p. 196.)

By turning the outer screw, both screws are elevated in the time usually employed to elevate a single screw, and they are elevated to double the height acquired by the ordinary jack-screw. While the load rests upon screw *C*, and prevents the same from revolving, the tubular screw *B* is left free to be revolved; and while working within *A*, and elevating by means of its right-hand thread, it also, at the same time, operates upon the interior screw *C*, by means of its left hand thread, and thus also elevates *C*.

The inventor says: I do not claim the invention of jack-screws, nor any of the forms thereof heretofore used, and I am aware that a jack-

screw has been constructed in which the centre piece has two opposite threaded screws, one on each end, and working in two female screws, one above and the other below.

But I *claim* the combination of the tubular screw B with the standard A and the inner screw C; the whole being arranged substantially as and for the purpose set forth.

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No. 13,783.—JOHN FOUSER.—*Improvement in Supporting-Jacks*.—Patented November 13, 1855. (Plates, p. 196.)

It will be seen that by means of the two sliding-blocks B C, and by placing the fulcrum D of lever E in one or the other of the recesses *e*, and operating the screw-coupling H, the outer point of the lever E, which supports the load, may be raised or lowered, or projected more or less forward, at pleasure.

*Claim*.—The lever E, with its sliding-block B, having any convenient number of recesses *e*, in combination with the adjustable screw-coupling H and its sliding block C, arranged and constructed substantially in the manner and for the purpose set forth.

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No. 13,835.—FRANCIS DREW, assignor to HIMSELF and SOLOMON S. GRAY.—*Improvement in Lifting-Jacks*.—Patented November 20, 1855. (Plates, p. 196.)

Pinions C C<sup>1</sup> engage with the teeth E E<sup>1</sup> upon follower B. As one of the levers G is depressed, its pawl I operates ratchet-wheel K, which revolves the wheel C, by which means the follower is raised; at the same time, by means of connections H H<sup>1</sup>, the lever G<sup>1</sup> is raised; when this lever is depressed, its pawl I<sup>1</sup> revolves ratchet-wheel K<sup>1</sup>, and the follower is again raised. Thus by operating the levers, the follower is continually raised, the retaining-pawls *x x*<sup>1</sup> engaging with the racks P P<sup>1</sup> and preventing it from returning.

When it is desired to drop the follower, it is only necessary to raise the pawls *x x*<sup>1</sup>, I I<sup>1</sup>, and it descends by its own weight.

*Claim*.—The described jack, consisting of the sockets F F<sup>1</sup> with their connecting arms H H<sup>1</sup> and pawls I I<sup>1</sup>, in combination with the ratchet-wheels K K<sup>1</sup> and cog-wheels C C<sup>1</sup>, arranged and operating in the manner set forth.

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No. 12,290.—JOHN SUTTON.—*Lubricator for Steam-Machinery*.—Patented January 23, 1855. (Plates, p. 197.)

*Claim*.—1st. Arranging the cylinder B and piston C of the feeder within or in the bottom of the grease reservoir A, with the cylinder opening directly into the reservoir, substantially as described, whereby the construction of the feeder is simplified, and it is rendered more compact, and provision is made for collecting the sediment within the reservoir.

2d. Constructing the feeder with a valve *f* in the piston, opening to

wards the discharge end of the cylinder, and a valve *d* in the discharge end of the cylinder, opening against and closing with the pressure of the steam or motive agent, substantially as described, whereby it is caused to be only necessary to move the piston once back and forth to charge and discharge the feeding cylinder, and the lubrication is effected more quickly and with less trouble to the engineer. (See engravings.)

No. 12,803.—ROBERT M. WADE.—*Lubricator*.—Patented May 1, 1855. (Plates, p. 197.)

The lever *I* being drawn in the direction of the arrow until it stops against the end *r* of the rim *P*, the opening *f* in the lower valve will be directly over the opening *i* in the diaphragm *a*, (see fig. 1,) and the lubricator discharges into the cylinder, the upper opening at this time being closed by the valve *G*. When the lever *I* is released, the spring *S* will carry it around to position fig. 2, when both upper and lower openings are closed. When it is desired to feed the lubricator, the section *n* of the rim *P* is turned outward, permitting the spring *S* to carry the lever around until it is brought up by the then extremity *x* of the rim. In this position of the lever, the opening *l* in the cover *B* is coincident with the perforation of the valve *G*, the small air-openings *o* and *t* being at the same time opposite each other. This permits the admission of oil to the reservoir; and when sufficient has entered, the section *n* is swung into place, and the lubricator is again ready for operation.

The part of spindle *C* which passes through socket *F* of valve *G* is of square section, and so is the socket, to prevent the valve from turning on the spindle. The nut *E* can be so turned as to press both the valves closely into their seats.

The inventor says: I make no claim to the shutting off of one passage of the lubricator when opening the other, by arrangement of valve perforations, as set forth; but I do *claim* constructing the moving parts of a central sectional spindle with disc-valves at its extremities, susceptible of steam-tight adjustment, as described: and combining the same with the perforated diaphragm *a* of the oil reservoir, for preventing external leakage, and otherwise acting as set forth.

Also, the sectional rim *P* and spring *S* in combination with the arrangement of the valve apertures relative to the ends of said rim, so as to furnish three stopping points to the actuating lever, for feed, discharge, and the entire closing of the lubricator, when operating as set forth.

No. 12,859.—GEORGE DIXON.—*Velocitrot Lubricator*.—Patented May 15, 1855. (Plates, p. 197.)

As the connecting rod *L* moves back and forth, it causes the oil-cup which is attached fast to it to move with great velocity, and doing so, the valve *C* is (by reason of the motion of the connecting rod being quicker than the action of gravitation) caused momentarily to be suspended; and while thus suspended, the oil flows through the dis-



charge *d* upon the crank-pin. By the time sufficient oil has escaped the valve falls and checks the supply. The oil flows through the space between the tubular inner surface *d* and the triangular valve-stem *k*. The screw *D* serves to regulate the height to which the valve shall be allowed to open.

*Claim.*—Providing oil-cups of crank-pins, and other movable journals, with a valve *C*, constructed, arranged, and operating substantially as herein described.

No. 13,406.—JAMES M. THOMPSON.—*Improvement in Oil-Drippers*.—Patented August 7, 1855. (Plates, p. 197.)

The dripper should not be filled quite up to partition *a*, as there should be no oil in the chamber at any time except what runs from the tube *F*, when the dripper is inverted to allow the oil to escape through the stem *B*; and as the capacity of the chamber is much larger than the capacity of the tube *C*, the oil passing from tube *F* into the chamber will leave the tubes *C* and *F* free to admit air to the bottom of the dripper, thus securing a free stream from the stem *B*, and preventing the escape of any oil except through the stem.

*Claim.*—The arrangement of the chamber *E*, in combination with the tubes *C* and *F*, as constructed, for the purpose specified.

No. 13,749.—MICHAEL EGAN.—*Improvement in Automatic Lubricator for Railroad Axles*.—Patented November 6, 1855. (Plates, p. 197.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim in general terms feeding oil to the axle by intermittent motion of the feeder or feeders, produced by the revolution of the axle or otherwise. Neither do I claim the employment of a feeder, which, by either constant or intermittent motion, receives oil from a reservoir below and deposits it on the axle.

I *claim* the arm *B* placed under the bearing and made to descend into the greuse and rise to the journal at each revolution of the axle by being connected to the eccentric *D*, or its equivalent, substantially as set forth.

No. 13,769.—JOHN SUTTON.—*Self-Feeding Atmospheric Lubricator*.—Patented November 6, 1855. (Plates, p. 197.)

Mode of operating this lubricator: Determine the number of drops of oil required per day for the part to be lubricated; select a feeder holding that quantity; put a washer on the shank end, and attach it to the brass box, bush, or other part, so that it shall be a fixed air-tight joint; see that the cap *B* has its elastic washer *d*; remove the dome *C* and regulating-plug *D*. In the space *E* place a flat circular piece of gutta-percha, cork, or rubber, having cut a small channel across its underface; then put in loosely circular pieces of cloth above it, screw down the regulating-plug *D* tightly with the fingers, fill the reservoir

through the neck *c* with oil, put on the cap B, etc., as now combine, screwing it tightly with the fingers; now, should it feed too much, tighten the plug D more, thus shutting off the air, or slacken it if not feeding enough until it delivers to suit, when the dome C may be screwed to its seat, as it is now in working order.

The inventor says: I *claim* an arrangement of means constructed on or within the cap or cover B (of the reservoir containing the oil or other lubricating material) sufficiently distant from the oil to never be in contact with the same, by the adjusting of which the passage or passages leading from the reservoir to the atmosphere may be entirely or partially opened or closed at will, thus causing an increase or decrease of the feeding of the oil to the part receiving lubrication. When properly adjusted, the dome C may be firmly secured down, when nothing can interfere with the regulating part.

I do not confine myself to the use of the plug D and the substance in the space E, as a hollow or other plug, or equivalents, may be used to produce the same effect; either of which may be used as the part, when placed, may permit, and without altering the principle or mode of feeding described.

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No. 13,397.—CHARLES A. POSTLEY.—*Improved Machine for Measuring and Weighing Grain*.—Patented August 7, 1855. (Plates, p. 197.)

The grain elevated by elevators D, and deposited in feed-hopper C, passes into buckets or measures E, as they are successively carried under the hopper. Connecting-rod T serves to operate the bucket-chain by falling into one of the teeth of ratchet S once during each revolution of the shaft which carries the crank-wheel U. The buckets pass, in their way forward, under the strike F. The supply of grain from C is governed by valve O and levers M and M<sup>2</sup>, operated by cam N, causing the valve to remain open whilst the bucket under the hopper is being filled and weighed, and closing it during the passage of the buckets onward.

The inventor says: I *claim* the combination, substantially as and for the purpose set forth and described, of the weighing mechanism, or its equivalent, with the series of measures upon an endless chain which carries them in succession under the hopper, under the strike, and over the scales.

I am aware that in the grain-weighing machines the cut-off has been so arranged that it is operated by the weight of the grain received in the hopper, and when the desired weight is attained; this, therefore, broadly, I do not claim.

But I *claim* the combination with the lever M<sup>2</sup> and valve O, respectively; of the lever M operated by the cam N, or its equivalent; and of the platform Z<sup>2</sup> and levers *g* and *g*<sup>2</sup>, by which the said valve may be operated by the motive power of the machine, or, failing this at any time, by the weight of the grain itself, substantially as set forth and described.

No. 12,615.—JAMES P. ARNOLD.—*Improvement in Presses.*—Patented April 3, 1855. (Plates, p. 197.)

The chain U is hooked to the platen D at Z, and passes over friction pulleys V. The belt-shipper W is fastened to this chain, and consequently, as the platen descends, the chain will draw the shipper along on the cone drums F F. The pressing operation having been finished, the chain is freed from hook Z, when (by means of weight or otherwise) the shipper W and belt are carried back to the other end of the cones. Figure 1 is part of a side view, and figure 2 is a top view of the machine.

The inventor says: I am aware that conical pulleys and a travelling belt thereon have been used for various purposes where speed and power are required at variable stages; these I do not claim.

But I *claim* operating the shipper that moves the belt along the cones by the descent of the platen whilst pressing, so that the power shall be increased with the resistance until the material is pressed, and then allowing the shipper to run back at an increased velocity when the bale is ready to be removed, substantially as described.

No. 12,740.—PELLS MANNY.—*Improved Hay-Press.*—Patented April 17, 1855. (Plates, p. 198.)

When the operation of pressing the hay is to be commenced, the doors H I, at each end of the case, are closed; the hay is placed in case A at one side of the lid K, and the lid is closed over the hay. Power is then applied in any proper manner to the levers C C, and the sliding-bottom B is moved, and with it the followers G G, and the hay is compressed in the form of a square bale within the square H I G. After that the doors are opened, and the bale withdrawn. Meanwhile the other space A, behind the followers, is to be filled with hay, and the follower in its return-motion compresses a second bale, and so forth.

*Claim.*—Having the followers G G arranged or placed so as to cross or intersect each other at right angles and inclined as herein described, and having the doors H I at each end of the box or case also inclined to correspond inversely with the followers for the purpose of having the hay compressed in the form of square bales; the line of pressure being diagonally through the bale, or the followers and doors exerting the pressure on the four sides of the bale, as herein shown and described, whereby little or no pressure is exerted against the sides of the box or case.

No. 13,060.—JONATHAN GROUT.—*Improved Self-acting Cotton-Press.*—Patented June 12, 1855. (Plates, p. 198.)

*a a* are the sides of the press; the floor of the press is placed on cross-piece C; two pieces A A are made fast to the top and side-timbers of a room, one leg being placed horizontally, and the other perpendicularly, and the whole press is suspended on these so as to swing

freely. F carries two levers B B with catches *d e*; the movable beam H passes through slots in the pieces *a*. As the press is swung out from the perpendicular to an oblique position, the levers are drawn along upon beam H, bringing the catches right to take hold and thrust it down as the press is swung back to its former position; here the small catches L L, which are attached to the sides *a a*, hold the beam fast while the same operation is repeated. The material to be pressed lies between H and C.

*Claim.*—The construction of a press, designed for the general purposes of a press, so arranged as to swing freely about an axis of motion, so that when the press is swung out in one direction, the said levers are brought into such a position relative to the other parts that they take hold of the beam and thrust it down as the press is swung back to its former position, and in a manner which allows the operation to be repeated until the degree of pressure desired is attained, substantially as set forth and described.

No. 13,061.—GEO. KING.—*Improvement in Pressing Tobacco in Plugs.*—Patented June 12, 1855. (Plates, p. 198.)

The tobacco is placed in hopper H in the form of rolls, and one over the other. Motion being given to pitman G, as the wheel C revolves, the pin *i* strikes against *h* on pulley *g*; and said pulley being drawn a certain distance, the sliding-box E is drawn towards the wheel by means of cords *f*, and the bar *p* forces the lower roll of tobacco from hopper H into box I, the slide J being drawn upwards by cord *j*. When *h* passes *i*, the box E moves back to its original position by means of spring L, and slide J falls by its own gravity, and forces the roll of tobacco down upon the upper surface of plunger F, where *a*<sup>1</sup> represents the roll. F is now moved towards C by pitman G, and roll *a*<sup>1</sup> falls within box E, directly in front of the plunger, and by the return movement of F is pressed against the inner surface of the plate D. The box now again moves towards the wheel; *i* coming in contact with *h*, the cord *n* turns pulley *m*, and cord *l* attached to said pulley draws down plate K, and the plug formed by the pressure to which it was subjected is forced downward from the machine.

*Claim.*—1st. The box E and plunger F, when arranged and operated substantially as shown, so that both the box and plunger have a reciprocating motion for the purpose of allowing the tobacco to be fed into the box, and also compressed therein, as described.

2d. The combination of the box E and the plunger F with the hopper H and slide J, for the purpose as herein shown and described.

No. 13,199.—AUGUSTUS M. GLOVER.—*Improvement in Cotton-Presses.*—Patented July 3, 1855. (Plates, p. 198.)

The roller E is in the rack-rod B at its lower end, projecting slightly beyond the face of the rod, and also beyond *a* the platen. By the introduction of roller E, opposite to the rack, the platen *a* is guided in its

movement in the box without liability of the wrapper or bagging to be either ruptured or wrinkled, as the platen is prevented from touching the wrapper by the circumference of said roller projecting slightly beyond the face of the platen.

*Claim.*—The use of the roller E moving with the platen *a* in combination with the rack C and pinion D, as described, for the purpose of preventing the platen touching the sacking in its descent, and keeping the platen in position when below the hopper, and the sides of the bale-box removed, as set forth.

No. 13,337.—GEO. R. COMSTOCK.—*Improvement in Cheese-Presses.*—Patented July 24, 1855. (Plates, p. 198.)

When the pressing operation has been completed, the pawls F and I are removed, and the gate run up by turning crank J; the connexion of rim *h* of eccentric and pins *i* of plates *f* causing the gate to rise. When the gate reaches the end of its upward movement, the roller R comes in contact with the bottom of platform P; and it is only necessary to turn crank Q to cause the platform and its load to travel outward to the front of the press, the rollers *r r'* guiding and preventing it from tilting.

The inventor says: I am aware that rollers, to aid the outward movement of the platform, have been used, but requiring separate adjustments to bring them into action. Such, therefore, I do not claim.

But I *claim* the roller R in the lower portion of the pressing gate, and brought into action by the rising of said gate on the removal of the pressure, substantially as and for the purposes specified.

No. 13,426.—H. H. FULTZ.—*Improvement in Cotton-Presses.*—Patented August 14, 1855. (Plates, p. 198.)

When the follower K and rod I are to be shoved back after the pressing operation has been performed, the springs Q are turned on their pivots, when the pawls move outwards from the teeth of rod I, so as to leave it free to be drawn back.

The inventor says: I claim nothing new in the manner of operating the follower by rack-bar or rod and pawls, nor yet in the addition of retaining pawls acting in concert with drivers, and am aware that the application of springs to the back of the pawls is old; neither do I claim, of itself, arranging the springs so that the pawls may be relieved of their pressure.

But I *claim* the arrangement with the retaining and driving pawls P and O, on either side of the follower rod or rack-bar I of the one spring Q, bearing at its opposite ends on the said pawls, and hung upon an intermediate pivot *e* in relation thereto; so that, upon turning the spring as described, both the retaining and driving pawls are expeditiously and simultaneously relieved from, or thrown into, spring-gear with the follower rod, and the working of the follower in its reverse directions is expedited, as specified.

No. 13,790.—RHUDOLPHUS KINSLEY.—*Improvement in Tobacco-Presses.*  
—Patented November 13, 1855. (Plates, p. 199.)

$c^1$  are the rolls or lumps of tobacco, and  $d$  are plates placed between each two rolls;  $f$  is the follower, which, before the pressing operation commences, projects sufficiently above the top of box  $a c c$ , that the follower can be properly depressed and the rolls compressed by placing the whole box under a press. On each side of the follower  $f$  are spring-bolts  $e$ ; these are driven back as the follower enters the box; and when it has descended the proper distance, the bolts are brought opposite holes  $h$  in the slide of the box and spring outwards into said holes, and thus secure the follower down. The whole box is then removed from the press; and when the rolls are sufficiently set to remain in shape after the pressure is relieved, the catches are forced back so as to release the follower; and when that is removed, the two slide pieces are turned outward, as shown at  $c^2$ , (fig. 1,) and the tobacco can then be removed. Fig. 1 represents a section on a larger scale.

*Claim.*—The construction and employment of a press-bar or compressor, substantially as described, in which the article to be compressed can be put and placed under a press, and, when compressed, can be retained in that position, and removed from the press till set, while the press is liberated for other operations, all as set forth.

No. 13,826.—WILLIAM F. PROVOST & CHARLES J. PROVOST.—*Improvement in Cotton-Presses.*—Patented November 20, 1855. (Plates, p. 199.)

Platen E is hung to rod  $k$ , bent over the platen at its top; said rod passes down through a slot in one of the uprights B, and terminates in a round head, which fits into a metallic shoe  $l$ , in which it may freely turn. This head and shoe prevent the rod from yielding to the pressure against the platen when connected to the rod  $m$  on the opposite side of the press, but is free to turn or be swung around with the platen, out of the way of the charging of the press, or for removing the bale, the rod  $k$  acting as a crane for that purpose. The rod  $m$  is arranged in a slot  $n$  in the other upright, and is prevented by means of a head  $o$  and plate  $p$  from rising above the height of said plate  $p$ , but can be pushed down into the slot  $n$  until the top of the rod is out of the way, when the bale is to be removed or the press to be charged. The link  $r$  which makes, as it were, one continuous rod of the two rods  $k m$ , can be removed, preparatory to swinging out the rod  $k$  and pushing down rod  $m$ .

*Claim.*—1st. The manner of hanging and holding the platen D by means of the rods  $k m$  and the coupling link  $r$ , so that the platen may be swung around out of the way, and the rod  $m$  let down, as described.

Also, in combination with the levers G F and their fulcras, the pivoting of the long one of said levers to one side of the centre of the follower D, to cant and to apply the power of the press in as near a direct line to the resistance as possible, as described.

No. 14,005.—WILLIAM WILBER.—*Improvement in Hydraulic Oil Presses.*—Patented December 25, 1855. (Plates, p. 199.)

Figure 1 represents only about one-half of the longitudinal section, the other half being exactly alike; *xx* indicates the centre line.

Two double-acting pumps, not shown in the engraving, force the water from reservoir C into cylinder F of the press; the water drives the pistons G G. The cylinder F is made of staves of hard wood, as seen in figure 3, and lined inside with a copper cylinder and double banded on the outside with iron bands; this construction being preferable to metallic cylinders, in reference to the lightness and elasticity of the wood staves. HH are the piston shafts, and on their ends are attached plates II, which are driven into the seed-boxes J, the top part J<sup>1</sup> of which being hinged on rod R, so as to be readily swung open for removing the seed-cake, and refurnishing it with fresh seed. The bed plates M on each end of the press are made of several sections of wood, cut across the grain, and the end of the grain is presented to the action of the press. These bed-plates are faced next the seed-box, with metallic plates L recessed and grooved to admit the end of the seed-box, and to convey downwards the oil which is pressed out against them.

The through-rods N serve to hold the feed-plates against the force of the piston, and to avoid the crushing of the wood; said rods are provided with collars, so that the strain will be disseminated throughout the thickness of the bed, as in figure 2.

Centrally located in the bottom of the seed-boxes J, so as to form a part of said bottom, are slides P, having grooves in them, into which take tongues, on the bottom of said boxes, as seen in figure 4, to guide them. Through these slides pass vertical steam-pipes *e*, uniting with one main pipe *f* connected with a steam-boiler. The pipes *e* extend into the seed-boxes, shielded by plates *ii*, which form divisions in the seed-boxes. The steam is allowed to pass through small openings to come into contact with the seeds placed in said divisions. The oil pressed out of the seed passes out through the joints of the seed-boxes, which joints are sufficiently open, and packed with cloth for that purpose. The cork in the pipe *j* is opened, and the water flows out of cylinder F into reservoir C.

The inventor says: I am aware that, in tobacco and other presses of a similar character, staves of wood have been used, hooped simply on the outside with iron. This I do not claim.

But I *claim* the manner of constructing the cylinder of a hydraulic press, viz., of staves of wood when lined with copper, or other suitable metal, as well as double banded, in the manner and for the purpose set forth.

I also claim the making of the bed-plates M of sections of wood, having the end of the grain of the wood in a line with the thrust of the piston or platen, for the purpose of using the elasticity of the wood, and thus relieving the press from the rigidity of metal, and for lightness and cheapness of construction, and also for enabling me to ar-

range the through-bolts so as to divide the strain upon them, and prevent their crushing the wood, as described.

I also claim the manner of uniting the through-bolts or rods with the bed-plates, viz., by means of the collars let into the separate sections of wood for relieving the heads of the bolts of the strain, and distributing the strain throughout the bed plates, substantially as described.

I also claim, in combination with the seed-boxes, the introducing of steam directly into the seeds in said boxes in contradistinction from heating them by conduction or radiation, so as to have both heat and moisture in the boxes, as described.

I also claim the hinging of the door and one of the sides of the box to the other side, so that drawing out the rod R, the door of the box will spring away from the plates, and one side will, at the same time, give slightly but sufficiently to release the cakes from the said pressure, thus allowing them to be easily lifted out or removed, as set forth.

No. 12,155.—WILLIAM H. BROWN.—*Improvement in Suspended Purchases*.—Patented June 2, 1855; patented in England, October 2, 1854. (Plates, p. 199.)

The weight is attached at *x* on block G, and elevated by means of purchase-fall T till the tackle-blocks G and F clutch, after which the purchase-fall T is relieved of all strain. The clutch-bars I are held in a close position by connecting-spring M. As the block G rises, the upper ends of bars I strike lips H, and are opened until the slots in the clutch-bars arrive opposite the lips, when spring M closes them over the lips, as shown in figure 4. Guide-falls U U<sup>1</sup> serve to move the burden along cable B to the desired position. When the burden is to be lowered, the clutch-bars are detached. This is done by pulling upon purchase-fall T and raising block G, (see figure 3,) which causes pin L to pass through the opening in cross-bar H<sup>1</sup>, and brings the movable cap-piece K<sup>1</sup> in contact with H<sup>1</sup>; whereby the connecting-rods K are pressed down to a line even with the centres of their joints, which causes them to remain in that position and hold open the clutch-bars I. The clutches are again brought up to their clutching position by moving up cap-piece K by hand.

The inventor says: I do not claim a suspended cable for transporting weights of any kind across ravines or streams; nor do I claim transporting bodies of any kind by means of a movable cable or catenary, which is to be raised or lowered to deliver the burden or weight at any intermediate place between its points of suspension or fastening, as these have been essayed.

But I do claim, in combination with a permanently suspended cable, a carriage provided with suitable block and tackle, by which a suspended weight of any kind may be transported to any given point and then lowered or raised, or by which it may be lowered or raised, as it is transported, at pleasure, substantially as described.

I also claim, in combination with a suspended cable, a truck or carriage composed of a main wheel D, guide-wheels E E<sup>1</sup>, and flexible



frame C, so that the wheels may adjust themselves to the line of the catenary, as described. (See figure 2.)

I also claim the automatically coupling and uncoupling of blocks F G, substantially in the manner and for the purpose set forth.

I also claim the system of equalizing beams Q R S, when combined with two, three, or more cables, for the purpose of evenly distributing the weight upon the several cables, as set forth. (See figure 1.)

No. 12,246.—JNO. L. MCPHERSON.—*Improvement in Scales*.—Patented January 16, 1855. (Plates, p. 200.)

*a* and *b* are the two concentric circular rims supported on the knife-edges *c*, and so loaded by weights *d* and *e* as to be accurately balanced when the weights are on opposite sides of the axis of suspension. The dish *f* is supported on a knife-edge *i* of a bar *h* running across the outer rim *a* on the side of the axis of suspension nearest the weight *e*. Any substance placed upon the dish will add to the weight on that side of the axis of suspension, and, for the restoration of the equilibrium, render it necessary to move the weight *e* towards the weight *d*. To do this, the rim *b* is moved within rim *a* by means of knob *l*, until the pointer *p* rests on the mark *q* of the indicator *r*; the scale will then be again balanced on knife-edges *c*, and the weight of the article in the dish indicated by the division of the graduated arc *m* upon which the pointer rests.

*Claim*.—The concentric loaded rims *a* and *b* in combination with the attachment of the dish, constructed, arranged, and operating substantially and for the purpose specified.

No. 12,249.—ELISHA P. BECKWITH.—*Improvement in Spring-Balances*.—Patented January 16, 1855. (Plates, p. 200.)

The cylinder A encompasses a spring balance of ordinary construction, only that the central rod B, around which is placed the spiral spring C, is graduated so as to determine the weight of the article without the usual index. Around the lower end of rod B turns a short arm E, which sustains a vertical pointer G. The distances between the horizontal graduations *b* on the outside of cylinder A, are equal to the graduations on rod B. Now, for instance, an article weighs four pounds, (see figure 1,) then the mark 4 on rod B will be even with the lower surface of cylinder A, and the pointer will be on a line with the fourth horizontal line *b* on the cylinder, and (if the price of the article be six cents) the arm E is turned round, so that the pointer will move around the cylinder on said fourth line *b* until the pointer has arrived on that one of the vertical lines *a* which is marked 6 on the upper edge of the cylinder. At the intersection of the lines *a* and *b* is marked the aggregate cost of the article.

*Claim*.—The employment or use of the cylinder A surrounding the spring balance, and divided into parts or graduated, substantially as shown, so that by the aid of the index rod G, or its equivalent, not

only the weight, but also the whole or aggregate cost of any article may be determined at a given price per pound.

No. 12,698.—DAVID M. SMYTH.—*Improvement in Platform-Balances.*  
—Patented April 10, 1855. (Plates, p. 200.)

Platform *a* is supported by two hangers *b b*, which rest on the knife-edges of four links *c*, which are in turn suspended to four short arms *d*, each two of them on parallel rock-shafts *e e*, from which rock-shafts extend long arms *h* downwards, (arms *h* forming with arms *d* any suitable angle to operate on the principle of the bent lever,) weights *i* being attached to the ends of arms *h*. The rod *l* connects a lower arm *m*, on one of shafts *e*, and an upper arm *n* on the other; so that the article to be weighed may be placed on any part of the platform, and receive equal resistance from the two weights. The outer ends of the shafts rest with knife-edges *f* on notched plates *g*. One end of the shaft carries a pointer *j*, which indicates the weight on sector *k*.

The inventor says: I am aware that in platform-balances the two rockers that sustain the platform have been connected together, so that the articles to be weighed may be placed on any part of the platform, and exert an equal force on the balance; and therefore I do not wish to be understood as claiming to be the first inventor of such an arrangement, irrespective of the combination specified.

And I am also aware that scales have been made to operate on the principle of the bent lever to weigh articles of varying weight, the arm carrying the weight gradually increasing in leverage as the arm sustaining the article to be weighed gradually decreases; but this mode of operation has never been combined with a platform-balance, and therefore I do not claim it as a separate device.

But I do *claim* the arrangement of the platform above, with hangers suspended at four corners to the two rockers, which are linked together substantially as described, when this is combined with the weighted arms on the rockers, operating on the principle of the bent lever, substantially as specified.

No. 13,232.—FREDERICK SCHEURER.—*Improvement in Counter-Scales.*  
—Patented July 10, 1855. (Plates, p. 200.)

The object of this construction is to have a flat scale to lay long goods upon, and to have the scale for the weights directly underneath the same.

*Claim.*—The combination of the common beam-scales with their inner arms *A A*<sup>1</sup>, connected together by links, to which the scale *W* to receive the weights is attached, and their outer arms connected by a frame to carry a flat or straight scale *G* to place the goods on which are to be weighed, the whole being constructed in the manner and for the purpose substantially as described.

charge *d* upon the crank-pin. By the time sufficient oil has escaped, the valve falls and checks the supply. The oil flows through the space between the tubular inner surface *d* and the triangular valve-stem *h*. The screw *D* serves to regulate the height to which the valve shall be allowed to open.

*Claim.*—Providing oil-cups of crank-pins, and other movable journals, with a valve *C*, constructed, arranged, and operating substantially as herein described.

No. 13,406.—JAMES M. THOMPSON.—*Improvement in Oil-Drippers*.—Patented August 7, 1855. (Plates, p. 197.)

The dripper should not be filled quite up to partition *a*, as there should be no oil in the chamber at any time except what runs from the tube *F*, when the dripper is inverted to allow the oil to escape through the stem *B*; and as the capacity of the chamber is much larger than the capacity of the tube *C*, the oil passing from tube *F* into the chamber will leave the tubes *C* and *F* free to admit air to the bottom of the dripper, thus securing a free stream from the stem *B*, and preventing the escape of any oil except through the stem.

*Claim.*—The arrangement of the chamber *E*, in combination with the tubes *C* and *F*, as constructed, for the purpose specified.

No. 13,749.—MICHAEL EGAN.—*Improvement in Automatic Lubricators for Railroad Axles*.—Patented November 6, 1855. (Plates, p. 197.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim in general terms feeding oil to the axle by intermittent motion of the feeder or feeders, produced by the revolution of the axle or otherwise. Neither do I claim the employment of a feeder, which, by either constant or intermittent motion, receives oil from a reservoir below and deposits it on the axle.

I *claim* the arm *B* placed under the bearing and made to descend into the grease and rise to the journal at each revolution of the axle by being connected to the eccentric *D*, or its equivalent, substantially as set forth.

No. 13,769.—JOHN SUTTON.—*Self-Feeding Atmospheric Lubricator*.—Patented November 6, 1855. (Plates, p. 197.)

Mode of operating this lubricator: Determine the number of drops of oil required per day for the part to be lubricated; select a feeder holding that quantity; put a washer on the shank end, and attach it to the brass box, bush, or other part, so that it shall be a fixed air-tight joint; see that the cap *B* has its elastic washer *d*; remove the dome *C* and regulating-plug *D*. In the space *E* place a flat circular piece of gutta-percha, cork, or rubber, having cut a small channel across its underface; then put in loosely circular pieces of cloth above it, screw down the regulating-plug *D* tightly with the fingers, fill the reservoir

through the neck *c* with oil, put on the cap B, etc., as now combine, screwing it tightly with the fingers; now, should it feed too much, tighten the plug D more, thus shutting off the air, or slacken it if not feeding enough until it delivers to suit, when the dome C may be screw d to its seat, as it is now in working order.

The inventor says: I *claim* an arrangement of means constructed on or within the cap or cover B (of the reservoir containing the oil or other lubricating material) sufficiently distant from the oil to never be in contact with the same, by the adjusting of which the passage or passages leading from the reservoir to the atmosphere may be entirely or partially opened or closed at will, thus causing an increase or decrease of the feeding of the oil to the part receiving lubrication. When properly adjusted, the dome C may be firmly secured down, when nothing can interfere with the regulating part.

I do not confine myself to the use of the plug D and the substance in the space E, as a hollow or other plug, or equivalents, may be used to produce the same effect; either of which may be used as the part, when placed, may permit, and without altering the principle or mode of feeding described.

No. 13,397.—CHARLES A. POSTLEY.—*Improved Machine for Measuring and Weighing Grain*.—Patented August 7, 1855. (Plates, p. 197.)

The grain elevated by elevators D, and deposited in feed-hopper C, passes into buckets or measures E, as they are successively carried under the hopper. Connecting-rod T serves to operate the bucket-chain by falling into one of the teeth of ratchet S once during each revolution of the shaft which carries the crank-wheel U. The buckets pass, in their way forward, under the strike F. The supply of grain from C is governed by valve O and levers M and M<sup>2</sup>, operated by cam N, causing the valve to remain open whilst the bucket under the hopper is being filled and weighed, and closing it during the passage of the buckets onward.

The inventor says: I *claim* the combination, substantially as and for the purpose set forth and described, of the weighing mechanism, or its equivalent, with the series of measures upon an endless chain which carries them in succession under the hopper, under the strike, and over the scales.

I am aware that in the grain-weighing machines the cut-off has been so arranged that it is operated by the weight of the grain received in the hopper, and when the desired weight is attained; this, therefore, broadly, I do not claim.

But I *claim* the combination with the lever M<sup>2</sup> and valve O, respectively; of the lever M operated by the cam N, or its equivalent; and of the platform Z<sup>2</sup> and levers *g* and *g*<sup>2</sup>, by which the said valve may be operated by the motive power of the machine, or, failing this at any time, by the weight of the grain itself, substantially as set forth and described.

No. 12,615.—JAMES P. ARNOLD.—*Improvement in Presses.*—Patented April 3, 1855. (Plates, p. 197.)

The chain U is hooked to the platen D at Z, and passes over friction-pulleys V. The belt-shipper W is fastened to this chain, and consequently, as the platen descends, the chain will draw the shipper along on the cone drums F F. The pressing operation having been finished, the chain is freed from hook Z, when (by means of weight or otherwise) the shipper W and belt are carried back to the other end of the cones. Figure 1 is part of a side view, and figure 2 is a top view of the machine.

The inventor says: I am aware that conical pulleys and a travelling belt thereon have been used for various purposes where speed and power are required at variable stages; these I do not claim.

But I *claim* operating the shipper that moves the belt along the cones by the descent of the platen whilst pressing, so that the power shall be increased with the resistance until the material is pressed, and then allowing the shipper to run back at an increased velocity when the bale is ready to be removed, substantially as described.

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No. 12,740.—PELLS MANNY.—*Improved Hay-Press.*—Patented April 17, 1855. (Plates, p. 198.)

When the operation of pressing the hay is to be commenced, the doors H I, at each end of the case, are closed; the hay is placed in case A at one side of the lid K, and the lid is closed over the hay. Power is then applied in any proper manner to the levers C C, and the sliding-bottom B is moved, and with it the followers G G, and the hay is compressed in the form of a square bale within the square H I G. After that the doors are opened, and the bale withdrawn. Meanwhile the other space A, behind the followers, is to be filled with hay, and the follower in its return-motion compresses a second bale, and so forth.

*Claim.*—Having the followers G G arranged or placed so as to cross or intersect each other at right angles and inclined as herein described, and having the doors H I at each end of the box or case also inclined to correspond inversely with the followers for the purpose of having the hay compressed in the form of square bales; the line of pressure being diagonally through the bale, or the followers and doors exerting the pressure on the four sides of the bale, as herein shown and described, whereby little or no pressure is exerted against the sides of the box or case.

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No. 13,060.—JONATHAN GROUT.—*Improved Self-acting Cotton-Press.*—Patented June 12, 1855. (Plates, p. 198.)

a a are the sides of the press; the floor of the press is placed on cross-piece C; two pieces A A are made fast to the top and side-timbers of a room, one leg being placed horizontally, and the other perpendicularly, and the whole press is suspended on these so as to swing

freely. F carries two levers B B with catches *d e*; the movable beam H passes through slots in the pieces *a*. As the press is swung out from the perpendicular to an oblique position, the levers are drawn along upon beam H, bringing the catches right to take hold and thrust it down as the press is swung back to its former position; here the small catches L L, which are attached to the sides *a a*, hold the beam fast while the same operation is repeated. The material to be pressed lies between H and C.

*Claim.*—The construction of a press, designed for the general purposes of a press, so arranged as to swing freely about an axis of motion, so that when the press is swung out in one direction, the said levers are brought into such a position relative to the other parts that they take hold of the beam and thrust it down as the press is swung back to its former position, and in a manner which allows the operation to be repeated until the degree of pressure desired is attained, substantially as set forth and described.

No. 13,061.—GEO. KING.—*Improvement in Pressing Tobacco in Plugs.*—Patented June 12, 1855. (Plates, p. 198.)

The tobacco is placed in hopper H in the form of rolls, and one over the other. Motion being given to pitman G, as the wheel C revolves, the pin *i* strikes against *h* on pulley *g*; and said pulley being drawn a certain distance, the sliding-box E is drawn towards the wheel by means of cords *f*, and the bar *p* forces the lower roll of tobacco from hopper H into box I, the slide J being drawn upwards by cord *j*. When *h* passes *i*, the box E moves back to its original position by means of spring L, and slide J falls by its own gravity, and forces the roll of tobacco down upon the upper surface of plunger F, where *a*<sup>1</sup> represents the roll. F is now moved towards C by pitman G, and roll *a*<sup>1</sup> falls within box E, directly in front of the plunger, and by the return movement of F is pressed against the inner surface of the plate D. The box now again moves towards the wheel; *i* coming in contact with *h*, the cord *n* turns pulley *m*, and cord *l* attached to said pulley draws down plate K, and the plug formed by the pressure to which it was subjected is forced downward from the machine.

*Claim.*—1st. The box E and plunger F, when arranged and operated substantially as shown, so that both the box and plunger have a reciprocating motion for the purpose of allowing the tobacco to be fed into the box, and also compressed therein, as described.

2d. The combination of the box E and the plunger F with the hopper H and slide J, for the purpose as herein shown and described.

No. 13,199.—AUGUSTUS M. GLOVER.—*Improvement in Cotton-Presses.*—Patented July 3, 1855. (Plates, p. 198.)

The roller E is in the rack-rod B at its lower end, projecting slightly beyond the face of the rod, and also beyond *a* the platen. By the introduction of roller E, opposite to the rack, the platen *a* is guided in its

## XIII.—GRINDING-MILLS AND GEARING.

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No. 13,843.—THOMAS H. CORBETT.—*Improvement in Belt-couplings*.—Patented November 27, 1855. (Plates, p. 203.)

The clamps consist each of two jaws *a a* hinged together at *c*. By driving the wedge *C* between the outer ends of the jaws, their rear ends, provided with little teeth, will be forced into the ends of belt *A* so as to hold it securely, and the two clamps and consequently the two ends of the belt will be secured together by the wedge *C*.

I *claim* coupling the two ends of a belt or any two objects together by means of two clamps *B* and a double-wedge key, substantially as and for the purpose set forth.

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No. 12,349.—F. B. HUNT & ELLIS NORDYKE.—*Improved Wire-Cloth Flour-Bolt*.—Patented February 6, 1855. (Plates, p. 203.)

The inventors say: We do not *claim* a wire-cloth bolt, with revolving brushes working within it; for they have been previously used.

But we *claim* the peculiar means shown for graduating the pressure of the brushes *F* against the wire-cloth of the bolt, viz: the loose hubs *I I* on the shaft *C* being attached by arms *H* to slides *G*, which work on the outer sides of the stationary arms *c*, the outer end of the slides *G* being attached to the brush-bars *F*, which fit in the forked ends of said arms *c*, the hubs *I I* by being moved on the shaft *c*, expanding or contracting the brush-bars, as desired, the hubs being secured in the proper position by the rods *g J*. (See engraving.)

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No. 12,422.—SAMUEL TAGGART.—*Improvement in Feeding Flour-Bolts*.—Patented February 20, 1855. (Plates, p. 203.)

The meal to be bolted falls upon hopper-boy *B*, and as shaft *D* rotates motion is given to flight-arm *E*. The flights *e* carry the meal towards the centre of the hopper-boy, and it falls through openings *b b* into annular chamber *C*, the meal being cooled in its passage from the periphery of the hopper-boy to the annular chamber. The sweepers *d d*, as they revolve, force the meal from the annular chamber into spouts *G G*, which convey it to the bolts.

The inventor says: I claim neither the hopper-boy nor the flight-arm, with flights attached, separately, for they have been previously used.

But I *claim* the combination of the annular chamber *C* with its sweepers *d d*, as arranged for the purpose set forth.

No. 13,541.—GEO. H. CONEY.—*Improvement in the Method of Securing Keys in Connecting-Rods, &c.*—Patented September 11, 1855. (Plates, p. 203.)

The nature of this invention will be understood from the claim and engravings.

*Claim.*—The combination of a screw-nut and a screw, divided longitudinally, as described, as a means by which to hold the key in its place.

No. 13,192.—GEORGE BUTLER WILLISON.—*Improvement in Cooling and Drying Flour.*—Patented July 3, 1855. (Plates, p. 203.)

An annular flange *r* of gum-elastic or other suitable material, attached to and projecting from the under surface of the top of the curb which touches the surface of the stone around the hole in the centre of the upper mill-stone, prevents the current of air from passing down that cavity; and a tangential flange *t*, extending from the circumference of the flange *r* to the side of the curb, and thence passing down the side of the curb so near to the base of the curb as merely to allow of the passage under it of the scrapers attached to the circumference of the upper mill-stone at its base, and terminating at one side of opening *p*, which admits the draft, serves to give direction to the current of air and causes it to pass around and over the stone in a regular course.

*Claim.*—The application of a draft of cold air over and around the upper mill-stone in grist mills, between the stone and the curb, to prevent sweating on the stones and curb, and to cool and dry the flour by means of the fan *h*, in combination with the annular and tangential flanges inside the curb, to serve as a guide for the current of air and the ventilating tube or tubes, in the manner and for the purposes set forth.

No. 12,378.—GEO. DANIELS.—*Improvement in Threshers and Cleaners of Grain.*—Patented February 13, 1855. (Plates, p. 203.)

The object of this improvement is to produce a simple, cheap, and easily-constructed apparatus for threshing, cleaning, and bagging grain in the fields. The operation of the machine will be plainly understood from an inspection of the engraving.

The inventor says: I do not claim a skeleton cylinder, nor inclined planes, nor a blower-case containing a fan attached to threshers and cleaners, irrespective of the peculiar construction of each, as described; nor do I claim placing a fan upon the shaft of a beating cylinder, as this combination has been known and used before.

But I *claim*, 1st. A skeleton cylinder, in combination with a cast-iron bed-plate *E*, constructed as and for the purposes specified.

2d. I claim the four inclined planes *G*, placed in relation to each other, as described, each at an angle of about 45°, as described, and so as to leave an oblong opening between them for the passage of the grain and chaff to the receiving-box, substantially as and for the purposes described.



3d. I claim the blower-case B, the receiving-box C, with its inclined plane *f* at its end, arranged and combined on the outside of the box, or body of the machine, substantially as and for the purpose specified.

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No. 12,512.—GEORGE LEACH.—*Improved Grain-Cleaner*.—Patented March 14, 1855. (Plates, p. 204.)

The tangential portions of furrows *h* and the tangential furrows *e* keep the eye free, as they conduct the grain quickly outwards, while the curved portions of the grooves *g* and grooves *f* retard the passage of the grain outward, so that it cannot pass too quickly through.

*Claim*.—Dressing or furrowing the stones by having the furrows or grooves *e f* cut in the face of the bed-stone B, and the furrows or grooves *g h* in the face of the runner C, said furrows or grooves being in the form or shape as shown and described, and for the purpose set forth.

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No. 12,657.—BENJ. T. TRIMMER.—*Improved Grain-Cleaner*.—Patented April 2, 1855. (Plates, p. 204.)

The wheat passes on and over the revolving-plate *m*, down the sides between the concave and convex cone, and is here exposed to the scouring action of the spring-teeth J and to the teeth X on the concave; the wheat then descends to the scouring-plate *n*, across which it is scrolled to the centre by the spiral scroll *z z* formed of India-rubber. This scroll exerts a further wiping action on the wheat, and delivers it on to the next scouring-plate. A set screw (not shown in the engravings) serves to raise or lower the bridge-tree upon which the shaft 2 rests, by which means the scouring-teeth and India-rubber scroll are brought to bear more heavily on the wheat, which may be done without danger of bruising the berries, as the spring-teeth and scroll are yielding.

I *claim* the construction and arrangement of the India-rubber scroll and spring-teeth regulated by the bridge-tree, for the purpose and in the manner substantially as described.

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No. 13,103.—HARRISON D. REYNOLDS.—*Improvement in Grain-Cleaners*.—Patented June 19, 1855. (Plates, p. 204.)

This improvement consists in the use of a conducting apparatus provided with openings and valves at various points in its length, whereby the grain is conveyed to any part of the scouring-cylinder that may be desired, in order to expose the grain to the scouring action for a longer or shorter time.

The inventor says: I do not claim the devices described, separately considered; but I *claim* the openings *q* in combination with the conductor *r* and scouring-cylinder *s*, arranged substantially as described, for the purpose specified.

No. 13,937.—JONATHAN L. BOOTH.—*Improvement in Grain-Cleaning Machines*.—Patented December 18, 1855. (Plates, p. 204.)

The beaters *J* throw the grain as it passes out of pipe *h* against the corrugations on the inside of shell *A*, and thereby cause it to be scoured. The fan *H* causes a current of air to pass through wire-cloth passages *d*, down through the space between the cylinder and shell, and up through the interior of the cylinder into the fan-box *D*; and the pulverized smut and dirt will follow the blast or current, and be ejected from the fan-box *D*. The cleansed grain will fall upon the basin *K*, and pass through the holes *i* and out through pipe *L*. At this point the grain will be subjected to another blast, which passes into the lower part of shell *A*, through the holes *c* into the lower part of tube *L*, and up through cylinder *G*.

*Claim*.—1st. In combination with the fan-box *D* enclosing the fan *H*, and provided with the hollow shaft through which the grain is fed, the cylinder *G*, shell *A*, and conical basin *K*, arranged in the manner described, for the purposes specified.

2d. The inverted conical basin *K*, with the tube or pipe *L*, provided with apertures *i* attached, in combination with the shell *A*, cylinder *G*, and fan-box *D*, substantially as shown and described.

3d. Feeding the grain into the space between the shell *A* and cylinder *G* by means of the hollow shaft *E* and arms *h h*, arranged as shown; whereby the grain is evenly fed into said space without interrupting or obstructing the current or blast which passes up through the cylinder, and the machine also rendered compact and efficient.

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No. 12,586.—WILLIAM H. ELLIOT.—*Improvement in the Combination of Speed and Resistance Governors*.—Patented March 27, 1855. (Plates, p. 204.)

*b* is the steam-box; *m* inlet, *m*<sup>1</sup> outlet-pipe, the inner end of the inlet-pipe being closed up; *o* cylindrical valve fitting over the end of the inlet-pipe, through each side of which there is an opening *n*, and through each side of the inlet-pipe there is also an opening *n*<sup>1</sup> exactly corresponding in size and shape with the opening in the valve. When these openings correspond in position, the valve is open and the steam escapes into the steam-box, and out of it at the outlet-pipe *m*<sup>1</sup>; but the valve is made to close these openings by either of two motions: one by revolving around the inlet-pipe, which is controlled by the velocity-governor, and one by sliding longitudinally over the inlet-pipe, which motion is controlled by the resistance-governor, so that each governor has perfect control over the valve-opening, without being influenced by the other. Valve-rod *p* passes through the end of the steam-box, by which means the valve receives both its motions. It receives its longitudinal motion from a resistance-governor, through forked lever *k*. *g* is an arm secured to the valve-rod, through which pin *w* passes freely; as the pin projects from segment *r*, any motion of the segment is communicated to the valve by means of the pin *w*, the arm *g*, and the valve-rod *p*.

The inventor says: I do not claim a centrifugal governor, or a resistance governor, when used separately; as I am aware that a governor of the latter character was patented by W. Gardner, June 10, 1851.

But I *claim* the combination of a speed-governor with a resistance-governor, in such a manner that each shall exert its own proper effect upon the motive-power, producing thereby a compound resultant regulation without either of the said governors interfering with the action of the other, as set forth.

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No. 13,549.—JONATHAN NESBITT, Jr., and THOMAS J. COSLEY.—*Improvement in Hominy-Machines*.—Patented September 11, 1855. (Plates, p. 204.)

The beater C has four faces—E E, F F. The faces E E are flat; the faces F F have screw-like projections G so arranged that if continued across the faces E E, these projections would meet, and by the action of their inclined sides propel the corn through the concave A, and beat it and break it. The teeth N stir and clean the corn, and prevent the machine from clogging. To break the corn more effectually than would be done with an entire screw-thread, the screw-threads F are interrupted by flat faces E.

We *claim* the construction of the beater, as set forth; the same consisting in a beater provided with four faces, two of which are plane or squared, and two provided with the inclined or screw-like projections, in the manner and for the purposes described.

We claim, in combination with such beater, the two rows of spurs in its plane faces, as set forth.

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No. 12,731.—JOHN SIMPSON.—*Improvement in Horse-Powers*.—Patented April 17, 1855. (Plates, p. 204.)

The main driving-wheel A has no central bearing, and is kept in place merely by the pulleys B C and the suspension-band D. The driving-wheel rests upon the driving-pulley B, and the rim E on the side of the driving-wheel bears upon the check-pulley C. The object of this check-pulley is to throw the foot of the wheel back, as the wheel is drawn or pressed forward by the action of the horses upon the planks H of the suspension-band D. The planks H are laid across and hooked to each other by iron straps k. The lower or returning portion of the suspension-band runs on friction-rollers m.

The object of the whole arrangement is to simplify the construction and to avoid gearing.

The inventor says: I do not claim a driving-wheel without central shaft or bearing; but what I *claim* as my improvement in horse-powers is: 1st. The employment of the large or main vertical driving-wheel without central bearings, in combination with the suspension-band, in the manner and for the purposes herein set forth.

2d. In combination with the driving-wheel without central bearings, and the suspension-band, the inner rim E and the pulley C, so arranged as to throw the foot of the driving-wheel back, all in the manner as herein set forth.

No. 12,782.—CLEMENT RUSSELL.—*Improvement in Horse-Powers.*—Patented May 1, 1855. (Plates, p. 205.)

The box C for the axis A is made in two parts, D and D<sup>1</sup>, which are inserted in the oblong slot E, the part D<sup>1</sup> from above, and D from underneath, until the flanges *a* bear against the ways *b* and *b*<sup>1</sup>. The nut H on the lower end of the axis A forces all parts snugly together. The axis A is allowed to slide freely back and forth in slot E, and thereby to adjust the pinions to the irregularities in the cogged circumference of the driving-wheel B.

The inventor says: I do not claim having the axis of the main driving-wheel of double-gearred horse-power movable, as this is common.

But I do *claim* providing a broad solid flanged box or centre C for the axis A to rest in when said box is made in two parts D D<sup>1</sup>, and fitted and confined by the axis itself, and flanges *a a a* in an oblong slot E formed in a bridge F, as constructed and arranged in the manner and for the purpose set forth.

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No. 13,167.—H. H. FULTZ.—*Improved Horse-Power.*—Patented July 3, 1855. (Plates, p. 205.)

The object of this improvement (the nature of which will be understood from the engraving) is to simplify the construction of horse-power.

*Claim.*—The application of the driving-wheel C in combination with the shaft A and pinion D, when constructed and operating in the manner described for the purpose specified.

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No. 13,955.—SAMUEL PELTON.—*Improvement in Horse-Powers.*—Patented December 18, 1855. (Plates, p. 205.)

This construction is to prevent throwing out of their proper position any of the cogs, they being preserved by the perfect balance thereof on the central line of force. This effect is secured by making the under side of the wheels of a disc form, (see fig. 3,) thus shortening their bearings on the under side, and giving an equal length of leverage, which form gives an equality of pressure the full length of their journal and breadth of their cogs; *xx* represents the central line of force. It will be seen by reference to fig. 2 that the same balance is secured by extending its bearings as far below the centre line of pressure P against its journals as the journal H rises above line P. The four levers U, to which the horses are attached, are secured to the master-wheel N by bolts passing through the end of the lever, and also through a clamp 3 for preventing the lever from rising too high, yet allows of sufficient movement to prevent undue strain on the master-wheel. The four braces V are riveted to the levers by bolts 4. I G L *k a* are the wheels.

The inventor says: I am aware that triple-gear horse-powers, constructed and arranged upon the same general principles as mine, are not new. I therefore do not claim this arrangement.

But I *claim* the improvement fully described, consisting in centreing

the wheels and pinions upon their several axles and bearings by bevelling or dishing the wheels, and extending their bearings in the manner described, whereby the pressure is equalized on the journals above and below each pinion and wheel; thereby preventing the unequal wear of the axles and journals, and consequently avoiding every tendency of the gearing to twist and break.

I claim the mode of constructing and attaching the levers U U U and levers V V V V, substantially as described, for the purposes set forth.

No. 13,029.—GEO. L. DULANEY.—*Improvement in Mill-Brushes*.—Patented June 12, 1855. (Plates, p. 205.)

Disc D is situated in a recess in the bottom of shell B, where it is allowed to turn freely. The cheeks C occupy spaces of a similar shape in the shell, fit around spindle A, and rest upon the movable disc. The exterior side of each cheek is curved in such manner as to meet the inner curve at one edge, and leave it thick at the other edge, thus giving it a wedge shape. These cheeks fit into spaces in the shell B of corresponding shape, but having additional room not occupied at the backs thereof (see figs. 1 and 2). Between these spaces are wings *a* curving in from the outer portion of the shell to the spindle. The disc is provided with projections *b* equal to the number of cheeks. They bear against the backs of the cheeks respectively, so that as the disc is caused to turn in the direction of the arrows, the cheeks will move with it. One edge of wedge E (inserted into a concentric slot *d*) bears against the shell B, and the other edge acts against disc D or (as represented in the figures) against one of the projections *b* of the disc. The wedge by its weight causes the disc to move in the direction of the arrows, which causes all the cheeks to closely wedge in the spindle A as fast as it wears so as to allow them to do so. The spindle is thus kept steady.

*Claim*.—The wedge-cheeks C C C, moveable disc D, and self-acting wedge E, or their equivalents, combined and operating substantially in the manner and for the purposes set forth.

No. 12,431.—CHAS. W. BROWN, assignor to GEO. W. BANKER and GEO. O. CARPENTER.—*Improvement in Paint-Mill*.—Patented February 20, 1855. (Plates, p. 205.)

*Claim*.—1st. Attaching the trough N, which receives the ground paint or material, to the running-stone F, so that it may rotate therewith, for the purpose of obviating the difficulty experienced in paint-mills, whose lower stone is the runner, of keeping the paint from running over the sides of the stone, and settling between the stone and the curb surrounding it, where it soon makes a hard bed which produces a great friction, as set forth.

2d. In combining with a paint-trough, rotating with the runner, a fixed scraper *o* and guards *q* and *r*, to cause the paint to flow over and

of said trough, and be guided into any suitable receptacle, whilst mill continues to run, substantially as described. (See engraving.)

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No. 12,707.—DAVID E. PAYNTER, assignor to ISRAEL M. BISSELL.—*Improved Paint-Mill*.—Patented April 10, 1855. (Plates, p. 205.)

The double cone *s t v* D runs with its part *s t v* within a stationary conical barrel A. The part *s* is smooth and fits the inner circumference of the smaller base of the barrel; the part *t* and *v* of the cone is provided with spiral grooves, which being deep on part *t* taper off on part *v* and stop a short distance off the large base of the cone so as to leave there a short smooth surface; from the large base the cone D slopes down and terminates in pivot E. The frusto-conical surface, embracing the outer edges of the deep teeth on part *t*, is sunk a little below *s* and *v*. At the bottom edge of hopper B, where it meets barrel A, and at the side nearer to the large base of the cone, said bottom edge is provided with a series of deep notches. The barrel A has also longitudinal grooves, corresponding in depth with the grooves on the parts *t* and *v* of the cone. The material passes from the hopper and is ground by part *t*, this operation being assisted by the said deep notches. The portion *t* being sunk, as above said, a considerable quantity of the material is admitted into this space. The spiral teeth carry the material on, further tritulating it, to the smooth end of part *v*, whence, after becoming further levigated, it is discharged on the cone D and scraped off by scraper M.

The inventor says: I am aware that mills with conical grinding surfaces are commonly used. I am also aware that many of the features described above have been used in connexion with other mills. I therefore do not wish to claim such parts individually; but what I desire to secure by letters patent is, the arrangement and combination of the whole of the parts contained in the foregoing specification; that is to say, I *claim* the double cone D, constructed as shown at *s t* and *v*, in combination with the barrel A, substantially as described for the purpose specified.

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No. 13,161.—JULIUS C. DICKEY.—*Improved Mill-Step*.—Patented July 3, 1855. (Plates, p. 205.)

By raising lever E, the roller D is forced up the inclined plane of lever E, and thus the spindle A is raised or depressed. The tube which contains the pot is secured to the tram-block foundation by means of cams F, the cams being pressed against the tube and up-rights cast on the tram-block foundation, for the purpose of giving the spindle its lateral motion.

*Claim*.—The application of the roller D and lever E for adjusting the height of the mill-spindle, when the latter rests in the tube C, and said tube is secured to the tram-block, in the manner set forth.

No. 13,954.—ISAAC N. PARKER.—*Improvement in Mill-Spindle Steps*.—Patented December 18, 1855. (Plates, p. 206.)

B represents a spindle-step, secured in the frame A, for supporting the lower end of a spindle-shaft. The upper end of the step is provided with a recess, which receives the end of the spindle-shaft C; and around the recess is a secondary chamber F, which contains the oil. The passage G connects the recess with the secondary chamber, and permits the oil to flow through said passage to the lower end of the spindle C; and thus, when said spindle revolves with great velocity, the lubricating substance is not apt to be thrown out of the spindle recess.

I do not claim the step described in W. P. Coleman's patent, dated October 1, 1851, as such is well known.

I *claim* the formation in the step of the oil-reservoir F, surrounding but separated from the spindle, and communicating with it by the opening G, at its bottom, with the periphery of the spindle, substantially in the manner described and for the purposes fully set forth.

No. 12,408.—CHAS. R. BARNES.—*Improved Mill-Stone Dress for Hulling Rice*.—Patented February 20, 1855. (Plates, p. 206.)

Figure 1 represents the runner, and figure 2 the bed-stone. The rice, passing in between the stones at the eye A of the runner, is carried by the velocity of the stone towards its outer edge till it strikes the furrows B, when, being turned upon its longest diameter, it passes on to the curved furrows C, when it is again turned upon its longest diameter; and then, coming in contact with the curved furrows E, in connexion with the curved furrows C and straight furrows D, they are made to rotate in all directions, and checked in their course towards the outer edge of, and prevented from leaving the stones too soon.

*Claim*.—The method described of dressing horizontal stones for hulling rice, the runner having curved furrows, in connexion with or separate from straight furrows, and the bed-stone having smaller curves draughted thereon, substantially as described and shown.

No. 13,115.—GEO. L. DULANEY, assignor to REUBEN ALLEN.—*Improved Mill-Dress*.—Patented June 19, 1855. (Plates, p. 206.)

The nature of this improvement will be understood by reference to the engraving.

The inventor says: I *claim* the construction of what I call a compound-elbow mill-dress, by the divisional mode of calculation described, having main elbow-leads, gutters, or grooves, formed with secondary or branch elbow-leads or comeys, communicating directly therewith, instead of being a distinct or separate series.

The said compound elbow-dress being formed upon the face of a mill-stone, having an inward sloping or dressed surface, together with an outward sloping feed or supply circle, specifically as described and for the purpose set forth.

No. 13,384.—ROBERT COCHRAN.—*Improved Method of Hanging Mill-Stones*.—Patented August 7, 1855. (Plates, p. 206.)

It will be understood from the claim and engravings how the mill-stone will true itself, if, on being put in motion, it is not true.

*Claim*.—The movable cock-eye 2 placed in the recess 3 3 on the top of the spindle, to co-operate with the cock-head 4 fit in the balance-rine 5 5, or their mechanical equivalents, the whole being substantially as described, and for the purpose set forth.

No. 13,985.—BISHOP J. HARRIS.—*Improved Mode of Dressing Mill-stones, for Scouring and Hulling Buckwheat, &c.*—Patented December 25, 1855. (Plates, p. 206.)

The nature of this invention consists in dressing horizontal mill stones with a smooth dress and without furrows, by bosoming the stones, both runner and bed-stone, one-third the distance from the eye towards the skirt being bevelled towards the eye in a direct slant, making the slant of the bosom not less than three-sixteenths of an inch for each stone where the stones are two feet and a half in diameter.

I *claim* the smooth and bevelled dress of mill-stones for scouring and hulling buckwheat, by which method the buckwheat is longer retained within the bosom of the stones and more effectually scoured without injury to the kernel than by any other known mode.

No. 12,822.—A. LEMPEKE.—*Mode of Checking Wind-Mill*.—Patented May 8, 1855. (Plates, p. 206.)

The depression of foot-lever J will raise rod K; the screw M will catch with the fork *t*, and throw the rod L and sleeve D<sup>1</sup> outward towards the sails.

*Claim*.—Operating the sleeve or collar D<sup>1</sup>, or moving said sleeve or collar on the shaft C towards the wings or sails *d* by means of the screw M on the shaft C, rod L, attached to the sleeve or collar D<sup>1</sup>, and lever J, as herein shown; whereby the chains *e*<sup>1</sup> are slackened and the wings or sails allowed to turn edgewise to the wind, thereby presenting no surface to the wind, and consequently stopping the mill, as herein described.

No. 12,348.—JOHN S. GRIFFITH.—*Improved Corn and Cob Crusher*.—Patented February 6, 1855. (Plates, p. 206.)

The stacks are held on end upon the platform *p* and in contact with the holders *q*, while the revolution of the frustrum holding the knives produces the cutting of the stalk into pieces, which, dropping between the rotating frustrums and concave, are by the teeth thereof crushed and ground, and discharged at *m*.

*Claim*.—The combination of platform *p*, holders *q*, and knives *l*, arranged with the crushing frustrums and concaves, as constructed and operating for the purposes set forth.



No. 12,356.—JOEL WEIGLE.—*Improved Crushing and Grinding Mill*.—Patented February 6, 1855. (Plates, p. 206.)

The grinder *b* has coarser corrugations than the grinder *c*; the casing *d* is secured to the platform *k* of the frame of the machine by screws *m*, and slots in the supporting-ears *ll*, which project from the casing so as to allow of a lateral adjustment. The casing *e* is permanently secured to the platform by means of ears *p* and screws *r*. The casings are combined by lateral ears *n n* and *t t* and bolts *s*, the ears *n n* having slots for the bolts to work in. By moving the casing *d* laterally upon the platform, a wider space can be produced between the descending side of the grinder *b* and its casing than there is between the opposite side of the grinder and its casing. Corn and cobs are fed through tube *g*, they are operated upon between grinder *b* and casing *d*, and the corrugations of *b* are such as to carry the stuff to the inner end of casing *d* and discharge it into the space between *c* and *e*, when it is carried forward and discharged into *i*. When shelled corn is to be ground, it is fed from hopper *h* into *f*. When it is desired to grind the meal finer or coarser, the set screw *v* is turned to move *c* longitudinally, and thereby to vary the space between *c* and *e*; and when it is desired to vary the fineness of the provender formed of cobs and corn, the casing *d* is moved laterally, as aboved described.

*Claim*.—Combining with the crusher *b* and the grinder *c*, the casings *d e*, in such a manner that the said crusher and grinder can be adjusted in a longitudinal direction, and the casing *d* of the crusher be adjusted in a lateral direction, substantially in the manner and for the purpose set forth.

No. 12,977.—WM. D. WILSON.—*Improved Corn Grinder and Crusher*.—Patented May 29, 1855. (Plates, p. 207.)

The lower end of concave *E* is hinged at *b*, and the upper part can be adjusted by set-screw *c*. The platform *F* is provided for the reception of the corn and the attendant to stand upon, and it is placed over the main driving-wheel *G*, and supported by the parts *B<sup>1</sup>* of the frame of the machine. Thus the attendant will not be in the way of the horse as he travels around in a circle, and the corn to be ground can be dumped upon it, and thus be at hand ready for being fed into the machine.

*Claim*.—The general arrangement and combination of the crushing-rollers *c c<sup>1</sup>*, grinding-roller *D*, adjustable concave *E*, platform *F*, and gearing *G H I J K L M*, substantially as and for the purposes set forth.

No. 13,476.—DANIEL S. JAMES, assignor to HIMSELF, J. B. WHITE, and J. W. McINTYRE.—*Improvement in Corn and Cobb Mills*.—Patented August 21, 1855. (Plates, p. 207.)

The rotary shell *A* is supported upon shoulder *a* of spindle *B* by arch *b*, and steadied at the bottom by cogged-rim *R*, held concentric with the shell by screws *g*.

The inventor says: I make no claim to any of the parts of the machine, separately considered; neither do I claim the simultaneous rotation of shell and burr, nor the means by which the same is produced, as such is not new. I *claim* suspending the rotary-shell by an upper arch, upon a shoulder of the main spindle, when the said shell is connected at the bottom with the burr, as described, and the moving-power applied directly to the shell, whereby friction is greatly diminished, and consequent facility of operation attained.

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No. 13,569.—RENSSELAER D. GRANGER.—*Improvement in Corn and Cobb Mills.*—Patented September 18, 1855. (Plates, p. 207.)

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not desire to confine myself to any particular number of arms on the bridge-tree C, or pieces F and H, as that must be determined by the size of the mill; neither do I wish to claim any particular size or arrangement of breaking or grinding-teeth. But I *claim* the adjustable horizontal guide-rollers *i*, in combination with the bridge-tree G *e*, spindle D, and spring *d*, for the purpose of maintaining a uniform relative position of the shell with the burr, and at the same time allowing the former to yield from the latter.

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No. 13,730.—GEO. PATTEN.—*Improvement in Corn and Cob Mills.*—Patented October 30, 1855. (Plates, p. 207.)

The object of this improvement is to remedy a defect existing in mills of this character, owing to the disparity between the supply of broken ear which passes to the fine-grinding portion of the machine and the grinding capacity of said portion. The crusher being double-surfaced in this machine, a double amount of breaking is constantly going on, the products of which unite below the breaker, and constitute a sufficient supply to employ the entire working capacity of the fine-grinding portion of the machine.

*Claim.*—The double-surfaced breaker and crusher D, between the upper portions of shell and burr, in combination with a shell A and burr B, constructed, arranged, and operating substantially as and for the purposes specified.

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No. 14,002.—THOMAS B. STOUT.—*Improvement in Corn and Cob Mills.*—Patented December 25, 1855. (Plates, p. 207.)

The top D of the burr can be vertically adjusted by means of screws *e* and *f*, so as to regulate the rapidity and degree of fineness with which the grinding proceeds. The auxiliary burr I and shell H are intended for grinding corn and other grain into fine meal and even flour. The burr I is taken round by means of arms *p* of driver N (keyed to the shaft and vertically adjustable by nut *o*) abutting against projections *i* on said burr. Thus the burr can always adapt its position to that of its

shell. The spindle adjustment, by means of the rods and nuts P S g h, will be understood by reference to the engravings.

*Claim.*—The adjustable "regulator" D, regulated and operating in connexion with the burr G and shell F, substantially in the manner and for the purposes set forth.

Also, coupling the spindle to the burr and adjusting it therein by means of the recess and pin d and the radial regulating rods S S, substantially as described; and in combination therewith the adjustment of the upper end of the spindle in the frame by the rods P P, or their equivalents, so that the two adjustments may harmonize with each other, and no disarrangement of the burr in its shell may arise in the application of the power to the upper end of the spindle.

Also, the auxiliary loose burr I, dressed in the direction opposite to that of the main burr G, and so arranged that it may revolve nearly or quite in contact with and adapt its position to that of its shell H, unrestrained by the parts by which it is attached and driven, substantially in the manner and for the purposes set forth.

No. 12,278.—WM. H. HARN.—*Improved Mill for Cutting and Grinding Vegetables.*—Patented January 23, 1855. (Plates, p. 207.)

A series of knives M M, on cylinder P, pass between a series of stationary knives N, so as to slice the fruit and let it fall on and pass between the fluted grinding-cylinders G G<sup>1</sup>.

*Claim.*—A slicing or cutting apparatus, consisting of a cylinder armed with knives, and working in connexion with stationary knives, substantially as described, in combination with a crushing or grinding apparatus, substantially such as described, or the equivalent thereof, the whole being so constructed as to slice the fruit or vegetables, and then crush or grind them in the same machine, as described.

No. 12,487.—SAMUEL W. POWELL.—*Improved Mill for Grinding and Belling Sumac.*—Patented March 6, 1855. (Plates, p. 207.)

The sumac is placed in hopper g, and thence passes upon cylinder b and between it and the hollow slotted cylinder a. The cutters e reduce the article, and the coarse particles are carried along and pass out at h. The reduced leaves pass through the slots of the hollow cylinder upon a conducting shaft D, which carries them to the aperture i and into the final grinding apparatus (not shown in the engravings.)

*Claim.*—The slotted hollow cylinder having a shaft armed with spirally arranged teeth revolving within it, constructed and arranged in the manner and for the purpose set forth, and disclaiming all other parts not claimed.

No. 12,953.—TOBIAS J. KINDLEBERGER.—*Improvement in Cider-Mills.*—Patented May 29, 1855. (Plates, p. 207.)

The scraper h extends across the box parallel to the axle of the knife-roller E, and is hinged to the box by means of rods r; it is made to

retreat (by means of cam D) as the knives *b* approach. The apple-tilter K consists of a forked rod, one end entering the hopper among the apples, the other being operated on by the cam D. The scraper *h* keeps the roller E clear without injury to the edge of the knives.

*Claim.*—So arranging the scraper *h*, in connexion with the roller E, that it shall perform its office without injury to the edge of the knives, by means of the cam D, operating substantially in the manner described, for preparing the fruit for the crushing-rollers G and H, in combination with the apple-tilter K, for the purpose set forth.

No. 13,448.—Z. COLEMAN ROBBINS, assignor to ANSON MARTIN.—*Improvement in Mills for Compressing and Grinding Grapes and other Small Fruits.*—Patented August 14, 1855. (Plates, p. 207.)

The vertically reciprocating compressor *i* works in grooves in the sides of the hopper-frame *m*. The revolving cylinders A B draw the grapes inward, and the compressor forces the grapes down between said cylinders.

The inventor says: I am aware that a reciprocating knocker or compressor has been employed within the hopper of fruit-grinding machines, in combination with a concave and a grinding cylinder; also, that two cylindrical rollers have been employed in combination with a feeding-roller within the fruit-hopper. I disclaim both of these arrangements, also these devices separately considered.

But I *claim* the combination and joint action of the compressor *i* and the cylinders A and B for compressing and grinding purposes, substantially as set forth.

No. 13,558.—WILLIAM WILBER.—*Improvement in Grinding Cotton and other Seed for their Oils.*—Patented September 11, 1855. (Plates, p. 208.)

The steam issues through long slotted nozzles *j j*, and acts upon the seeds as they fall towards the rollers, or after they are between the rollers, for the purpose of heating and moistening the seeds whilst being crushed, so as to prevent the gumming of the rollers.

I *claim* the application of jets of steam for lubricating the surfaces of cylinders for grinding cotton-seeds, to prevent their gumming up or being clogged by the ground material, substantially in the manner described.

No. 13,741.—SAMUEL KRAUSER.—*Improvement in Cider or Wine Mills.*—Patented October 30, 1855. (Plates, p. 208.)

The tumblers F F<sup>1</sup>, which fit easily into the matrix of the screws on shaft S, are fastened to a shaft R, so that one of the tumblers will be in gear with its screw when the other is not. One of the tumblers being in gear with its screw, and shaft S (to which grinding disc *x*<sup>2</sup> is fastened) being revolved, the shaft and disc will move laterally until eccentric E or E<sup>1</sup> will strike its catch *m*, and remove its lip *e* from shaft

R. As soon as  $m$  is thus removed, the pin  $D^1$  on flange  $D$  arrives at the projection  $H$  on the tumbler, and throws it out of gear, and the other into gear, when the lateral movement of the shaft and disc will be reversed. Thus the shaft and disc will have a rotary and at the same time a lateral reciprocating motion. By this means the pumice will constantly be worked through the sieves  $x^1 x^1$  at the sides of the hopper. The sides of the skeleton concave  $W$  do not touch the sides of the sieves; the spaces thus left open afford an additional avenue for the escape of the confined pumice. The scraping-wheels  $x$  are to keep the sieves clean.

*Claim.*—1st. Communicating a reciprocating as well as a rotary motion to the grinding-disc  $x^2$ , in the manner and for the purposes described.

2d. The use of the grinding disc  $x^2$  with its peculiar movements, in combination with the two stationary sieves  $x^1 x^1$ , for the purpose of pressing the whole or a part of the pumice through their meshes, and also causing them to assist in reducing the fruit to a pumice by providing their inner surfaces with sharp projections, as described and set forth.

3d. The arrangement of the skeleton concave  $W$  with reference to sieves, in the manner and for the purpose as described.

4th. In combination with operating the screw by means of two vibrating tumblers  $F F^1$ , as described, the use of the catches  $m m$ , in the manner and for the purpose described.

5th. In combination with the side-screws the application of the scraping-wheels  $x x$ , in the manner and for the purpose set forth.

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NO. 13,837.—CORNELIUS W. VAN VLIET, assignor to CHAS. PARKER.—*Improvement in Mills for Grinding Coffee, &c.*—Patented November 20, 1855. (Plates, p. 208.)

A cast-iron shell envelopes the two grinding-cones  $C$  and  $D$  by an indented surface, leaving a narrow outlet channel  $i$  at the greatest circumference of the upper cone and the smallest circumference of the lower cone, and a similar channel at the lower portion of the greatest circumference of the grinding-cone  $D$ . The upper cone  $C$ , which makes only half the number of revolutions of the lower cone  $D$ , crushes the coffee coarsely; and the lower cone  $D$  crushes it to any desired degree of fineness, according to the adjustment of the set-screw  $E$ . The purpose of this arrangement is to grind all the particles of coffee to a uniform size, from which a more perfect and aromatic extract of coffee can be made than otherwise.

I *claim* the peculiar arrangement of the crushing and the grinding-cones, as described, and in combination therewith the passage  $i$  leading from the largest circumference of the upper cone to the smallest circumference of the lower cone, substantially as set forth and for the purposes specified.

No. 13,839.—W. O. HICKOK.—*Improvement in Mills for Grinding Apples*.—Patented November 20, 1855. (Plates, p. 208.)

The object of the breakers *d* is to remedy a defect in "Powel's" mill, in which most of the small lumps which are torn from the apples pass from between the cylinders in a solid or uncrushed condition, whereby a large quantity of the juice of the fruit is lost, it being difficult to express it from the uncrushed lumps by the subsequent operation in the press.

The inventor says: I do not claim the cylinders on whose surfaces grooved and fluted helical ribs are formed, and which move with different velocities, as these were patented by Samuel W. Powel in 1849.

But I *claim* the breakers *d d*, constructed and applied substantially and for the purpose as described and set forth, whether the said breakers are used in combination with the helical ribs *c c* and the teeth *b b*, so as to produce a separate and distinct depression *e* around each tooth, as described and set forth, or whether the said breakers are used in combination with the teeth above, as shown.

No. 12,181.—AMORY FELTON.—*Improvement in Grinding-Mills*.—Patented January 2, 1855. (Plates, p. 208.)

The grain passes from a hopper through opening *b*, and is admitted between the cylinder and concave at one end. The grain as it is crushed is carried along to the discharge opening *f* at the opposite end of the concave by the spiral flanches *c*. The spiral flanches *c* of the concave and of the cap (when put together) form continuous curves, and there is a sufficient number of such flanches to cause the grain to pass over the cylinder and between the grinding surfaces several times before reaching the discharge end. As the flanches prevent the grain from passing twice between any portion of the grinding surfaces, the passage will always be left clear for that which follows, by which means, the inventor alleges, the mill can be fed very fast without clogging.

The fingers *e* (which are vibrated by means of rod I and cam J) operate at the discharge end of the concave opposite the opening *f*, to prevent the ground grain from clogging at that part.

The inventor says: I do not claim, separately, either of the parts herein described; but I do *claim* the combination of the cylinder B, concave C, cap H, and reciprocating teeth or fingers *e*, the concave and cap being provided with spiral flanches *c*; the above parts being constructed and arranged substantially as shown and for the purpose as set forth.

No. 12,223.—JOHN L. YULE.—*Improvement in Flouring-Mills*.—Patented January 9, 1855. (Plates, p. 208.)

This invention is clearly represented in the engravings.

*Claim*.—Adjusting the parallelism of the upper stone to the lower by

means of the swinging frame K and pivots *d*, the height of the lower stone being regulated by the step C and screws *a a* acting on the spindle, the said spindle having a boss to give the shake-motion to the shoe O by means of the arm R and rod Q.

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No. 12,461.—CHARLES LEAVITT.—*Improvement in Portable Grain-Mills*.—Patented February 27, 1855. (Plates, p. 209.)

The inventor says in his specification: My plan of casting the legs and other portions in one piece adds much to the steadiness and efficiency of the mill, while no single stick of timber can afford such strength and stiffness as the lever in two parts, without greatly increasing the weight. Fig. 2 is a section on an enlarged scale.

*Claim*.—The combination of the bed-plate *a*, the legs or supporters *b*, the breaker *c*, and the main pivot *d*, cast in one piece; and these parts, in combination with the lever *r*, attached to an external revolving concave, constructed and arranged substantially as described, and for the purposes specified.

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No. 12,959.—HENRY MELLISH.—*Improved Shoe for Grain-Mills*.—Patented May 29, 1855. (Plates, p. 209.)

This improvement consists in arranging, inside the shoe, through which the grain passes into the mill, a barrier *e*, running obliquely upwards and backwards to a screw *f* with meshes sufficiently large for the grain to pass through. The grain passes in beyond the partition *g*, under the screen and up through its meshes and over the barrier, whilst the heavier and larger substances are arrested and retained in the shoe. The shoe can be emptied by drawing back the slide *l* and opening hole *i*. P is the mill-stone.

The inventor says: I do not claim the invention of a vibrating shoe, as such, through which to pass grain from the hopper to the mill.

I *claim* the separating shoe for grain-mills, as described, having an inclined barrier *e*, arranged and operating below the screen *f*, constructed substantially in the manner set forth.

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No. 13,610.—D. S. WAGENER.—*Improvement in Flouring-Mills*.—Patented September 25, 1855. (Plates, p. 209.)

As the blower D rapidly revolves, a suction is created through tubes B and C, passing rapidly through the grain, as it falls from the shoe K through the tube into the eye of the stone, the air-tight chamber A excluding all dust from concentrating in the eye of the stone, as is the case with other mills; the whole force of the current of air passes undisturbed through the grain, cleansing it entirely of the dust and all light substances. A portion of the air escapes with the grain and ventilates the stones.

*Claim*.—The arrangement of tubes B and C, connected by the supplemental shoe K, within the air-tight chamber A, in the manner described, and for the purpose specified.

No. 13,996.—EZRA RIPLEY.—*Improvement in Mills for Grinding Grain, &c.*—Patented December 25, 1855. (Plates, p. 209.)

The end of the shaft of cylinder D is provided with cams *b b*, which act upon lever *d* attached to shaft *e* of cylinder E; partially wound around the shaft is a spring *f*, which, when the cams act upon the end of the lever, so as to partially rotate the cylinder E downwards, becomes extended. When the cam has passed the end of the lever, the spring, being at liberty to act, contracts to its original proportions, and at the same time partially rotates cylinder E upwards, thereby obtaining a partially rotating, reciprocating motion, so as to feed the substance to be ground in a regular, intermittent succession of quantities.

The inventor says: I do not claim the combination of two or more cylinders for grinding, when such cylinders have each of them a continuous rotary motion; but I *claim* combining with a continuous rotating grinding-cylinder D, or plates, one or more grinding-cylinders E, which have a partially rotating, reciprocating motion in opposite directions given to it or them by the cams, lever, and spring, as described, or by other analogous devices for the same purpose, the combination being substantially in the manner and for the purposes as set forth.

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No. 12,870.—FRANCIS PEABODY.—*Method of Regulating Wind-Mills.*—Patented May 15, 1855. (Plates, p. 209.)

The disc A is secured to the shaft K, (which carries also the wind-wheel B,) and revolves with it. The wind-wheel is fitted to the shaft K with a spline, so that the two revolve together, while the wheel is allowed to move to and from the disc. *g* is a ring which slides freely upon the shaft K, and is adjusted to a greater or less distance from the disc by the screws R. The spiral spring P bears one end against the hub of the wind-wheel, the other against the ring *g*; the wheel is thus pressed constantly from the disc with a force adjustable by means of said screws R. When the force of the wind increases, the spring yields and the wheel approaches the disc, and the passage for the air between the two is contracted, and consequently the velocity of the wheel is prevented from becoming excessive; and *vice versa*, when the force of the wind diminishes.

*Claim.*—Regulating the action of the wind upon the wheel by means of the disc A, constructed and operating in the manner substantially as herein set forth.

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No. 13,339.—JAMES MONTGOMERY.—*Improvement in Wrought-Iron Shafts.*—Patented July 24, 1855. (Plates, p. 209.)

Having rolled a number of separate iron bars 1 2 3, etc., of the form shown in cross section fig. 2, they are put together with thin wedge-shaped rolled iron placed between them at the two ends, and at such other part of the shaft as may be designed for the bearing. Strong iron withes are then firmly twisted around the bundle, the parts where the wedges are placed are exposed to a welding heat, and a conical



piece of cold cast-iron having been inserted in the central hollow to preserve the due shape of the same, the bars and wedges are welded together; the conical plug is then driven out. These shafts are lighter, more elastic, and (the component bars being rolled separately) of better quality than the common solid shafts.

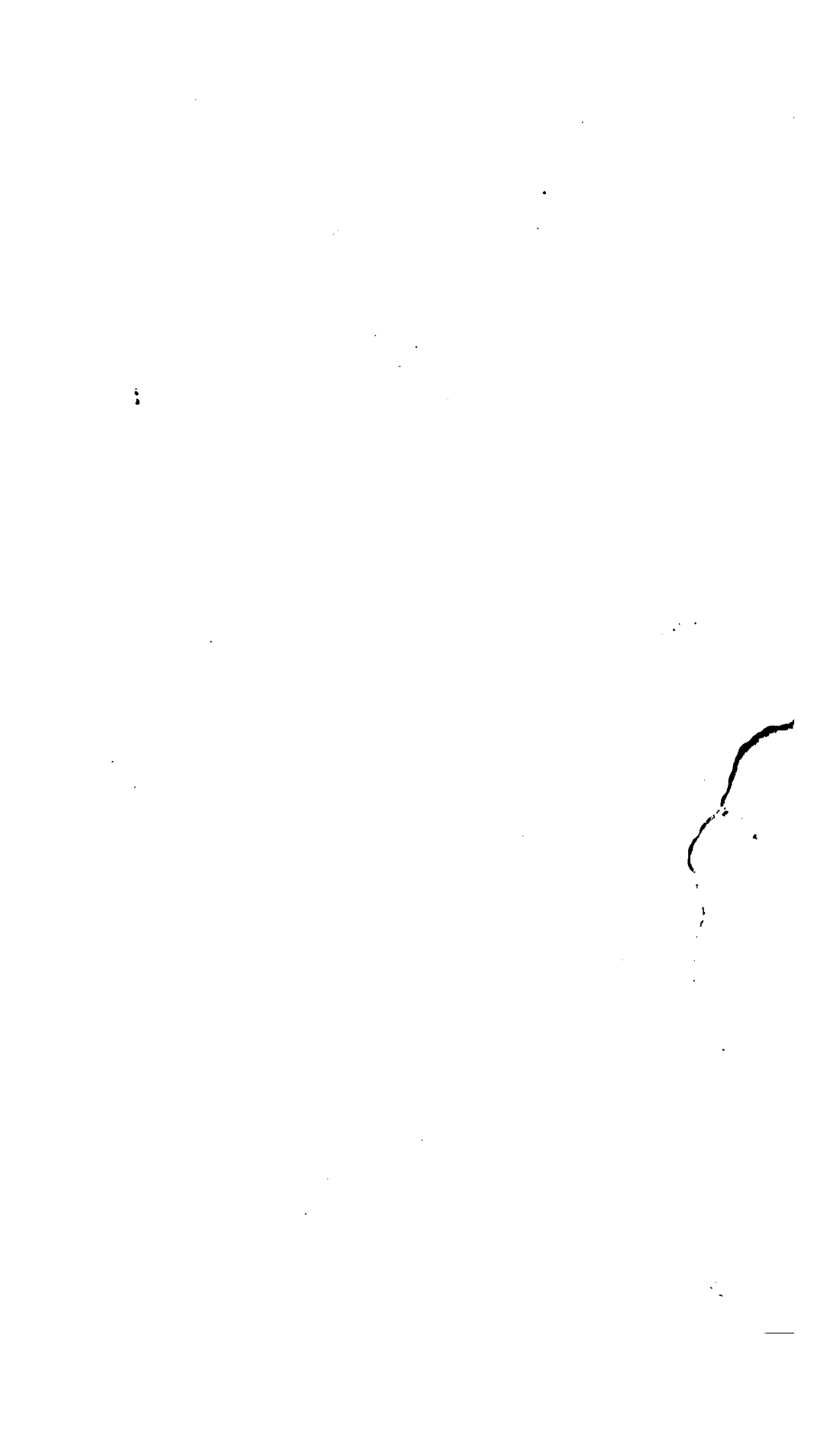
*Claim.*—The construction of a hollow compound shaft by means of the bars and wedges, arranged and welded together only at the journals or bearings, as described, while the bars are separated by sufficient spaces at all other parts, in the manner and for the purposes substantially as described.

No. 12,839.—GRANT B. TURNER.—*Improvement in Smut-Machines.*—Patented May 8, 1855. (Plates, p. 209.)

The grain passes from hopper A through sieve C and over board g on to the screen H, where it is subjected to a blast from fan-blower K. The light impurities separated at this point pass out of the machine at p, whilst the heavy grain passes through M and N on to the scouring-disc o, and the lighter grain falls through the screen and passes out at L. The centrifugal force of the disc o throws the grain against the ribs e d, which breaks the smut-balls, and finally throws it off at its periphery against the ribbed cap R. The grain falls upon concentrator S, the smut passing through its perforations, whence it is carried out by the blast passing through between the inner concentrator S and the outer one m, and thus a separation of the smut from the grain is made as soon as the smut is loosened from the grain. The grain passes then through another similar scouring apparatus and over board r into the main blast, through which and out at n the heavy particles only pass, while the light wheat, white caps, etc., are carried up the trunk, and, striking projection T<sup>1</sup>, are thrown out at L. The white-caps which may pass up with the blast, instead of choking the screen H, pass out at u.

*Claim.*—In combination with the scouring-disc or runner and outside concentrator, the inner perforated and partial concentrator, slightly elevated from the outer one, for the purpose and in the manner set forth.

Also, in combination with the screen H in the blast-trunk T, the opening u directly under said screen to allow the white caps which may have passed through the scouring-plates to pass out, instead of being held up against the bottom of said screen by the blast, as set forth.



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